

GAP

Release 4.4.7
17 March 2006

Index

The GAP Group

<http://www.gap-system.org>

Full Index

This index covers the five main books of the GAP manual, pages are given with respect to each manual: **Ref**, **Tut**, **Prg**, **New**, and **Ext**. A page number in *italics* refers to a whole section which is devoted to the indexed subject. Keywords are sorted with case and spaces ignored, e.g., “**PermutationCharacter**” comes before “permutation group”.

- (Near-)Additive Magma Categories, *R 553*
- (Near-)Additive Magma Generation, *R 554*
- +, *R 48*
- , *R 48*
- A, *R 30*
- B, *R 30*
- C, *R 31*
- D, *R 30*
- K, *R 29*
- L, *R 29*
- M, *R 30*
- N, *R 30*
- O, *R 30*
- P, *R 31*
 - on Macintosh, *R 31*
- R, *R 29*
- T, *R 31*
- U, *R 31*
- W, *R 31*
 - on Macintosh, *R 32*
- X, *R 31*
- Y, *R 31*
- a, *R 30*
 - on Macintosh, *R 32*
- b, *R 27*
- e, *R 27*
 - on Macintosh, *R 32*
- f, *R 27*
 - on Macintosh, *R 32*
- g, *R 28*
- g -g, *R 28*
- h, *R 27*
- i, *R 31*
- l, *R 29*
- m, *R 28*
- n, *R 28*
 - on Macintosh, *R 32*
- o, *R 28*
 - on Macintosh, *R 32*
- p, *R 31*
- q, *R 27*
- r, *R 29*
- x, *R 28*
- y, *R 28*
- z, *R 31*
 - on Macintosh, *R 31*
- ., *E 16*
- .gaprc, *R 33*
- /, *R 48*
 - for character tables, *R 729*
- %, *E 24*
- %display, *E 25*
- %enddisplay, *E 25*
- *, *R 48*
 - for character tables, *R 729*
- \', *R 247*
- \., *E 16*
- \>, *E 16*
- \Appendices, *E 13*
- \BeginningOfBook, *E 12*
- \Bibliography, *E 11*
- \C, *E 20*
- \Chapter, *E 15*
- \Chapters, *E 13*
- \Colophon, *E 12*
- \Day, *E 14*
- \Declaration, *E 27*
- \EndOfBook, *E 13*
- \F, *E 20*
- \FileHeader, *E 27*
- \FrontMatter, *E 13*
- \Index, *E 11*
- \Mailto, *E 16*
- \Month, *E 14*

`\N`, E 20
`\OneColumnTableOfContents`, E 12
`\Package`, E 16
`\PseudoInput`, E 14
`\Q`, E 20
`\R`, E 20
`\Section`, E 15
`\TableOfContents`, E 12
`\TitlePage`, E 11
`\Today`, E 14
`\URL`, E 16
`\UseGapDocReferences`, E 12
`\UseReferences`, E 12
`\XYZ`, R 247
`\Year`, E 14
`\Z`, E 20
`\`, R 247
`\`, R 247
`\accent127`, E 16
`\atindex`, E 16
`\b`, R 247
`\beginexample`, E 22
 indicating unstable output, E 23
`\beginitems`, E 20
`\beginlist`, E 21
`\beginntt`, E 22
`\c`, R 247
`\calR`, E 20
`\endexample`, E 22
`\enditems`, E 20
`\endlist`, E 21
`\endt`, E 22
`\fmark`, E 16
`\in`, operation for testing membership, R 272
`\index`, E 16
`\indextt`, E 16
`\item`, E 21
`\itemitem`, E 21
`\kernttindent`, E 16
`\lq`, E 16
`\matrix`, E 23
`\n`, R 247
`\nolabel`, use in index and label suppression, E 15
`\null`, use in index suppression, E 15
`\package`, E 11
`\pif`, E 16
`\r`, R 247
`\rq`, E 16

\sim , R 48
 for class functions, R 767
 1-Cohomology, R 375
 2-Cohomology and Extensions, R 454

A

A, Attribute mark-up, E 16
 AbelianGroup, R 507
 AbelianInvariants, for character tables, R 731
 for groups, R 364
 Abelian Invariants for Subgroups, R 474
 AbelianInvariantsMultiplier, R 378
 AbelianInvariantsNormalClosureFpGroup, R 474
 AbelianInvariantsNormalClosureFpGroupRrs,
 R 474
 AbelianInvariantsOfList, R 239
 AbelianInvariantsSubgroupFpGroup, R 474
 AbelianInvariantsSubgroupFpGroupMtc, R 474
 AbelianInvariantsSubgroupFpGroupRrs, R 474
 AbelianNumberField, R 587
 abelian number field, R 589
 abelian number fields, canonicalbasis, R 590
 abelian number fields, Galois group, R 592
 AbelianSubfactorAction, R 400
 About Functions, T 25
 About Group Actions, R 392
 AbsInt, R 126
 AbsoluteIrreducibleModules, R 748
 AbsoluteValue, R 156
 absolute value of an integer, R 126
 AbsolutIrreducibleModules, R 748
 abstract word, R 321
 AbstractWordTietzeWord, R 483
 accessing, list elements, R 171
 record elements, R 258
 Accessing a Module, R 693
 Accessing Record Elements, R 258
 Accessing Subgroups via Tables of Marks, R 714
 Accessing Weak Pointer Objects as Lists, E 53
 Acknowledgements, T 12
 AClosestVectorCombinationsMatFFFEVecFFE,
 R 215
 AClosestVectorCombinationsMatFFFEVec-
 FFFECoords, R 215
 ActingAlgebra, R 630
 ActingDomain, R 404
 Acting OnRight and OnLeft, R 430
 Action, R 399

- action, by conjugation, R 393
 - on blocks, R 393
 - on sets, R 393
- ActionHomomorphism, R 398
- Action of a group on itself, R 400
- Action on Subfactors Defined by a Pcgs, R 445
- actions, R 393
- Actions of Groups, T 47
- Actions of Matrix Groups, R 426
- ActorOfExternalSet, R 406
- Add, R 174
- add, an element to a set, R 193
- AddCoeffs, R 213
- AddGenerator, R 485
- AddGenerators, R 341
- AddGeneratorsExtendSchreierTree, R 422
- AddHashEntry, N 10
- Adding a new Attribute, P 37
- Adding a new Operation, P 36
- Adding a new Representation, P 38
- Adding new Concepts, P 39
- addition, R 48
 - list and non-list, R 182
 - matrices, R 219
 - matrix and scalar, R 219
 - operation, R 292
 - rational functions, R 666
 - scalar and matrix, R 219
 - scalar and matrix list, R 221
 - scalar and vector, R 211
 - vector and scalar, R 211
 - vectors, R 211
- Addition of a Method, P 34
- Additive Arithmetic for Lists, R 182
- AdditiveInverse, R 290
- AdditiveInverseAttr, R 290
- AdditiveInverseImmutable, R 290
- AdditiveInverseMutable, R 290
- AdditiveInverseOp, R 290
- AdditiveInverseSameMutability, R 290
- AdditiveInverseSM, R 290
- AdditiveNeutralElement, R 555
- AddRelator, R 485
- AddRowVector, R 213
- AddRule, R 341
- AddRuleReduced, R 341
- AddSet, R 193
- AdjointAssociativeAlgebra, R 647
- AdjointBasis, R 619
- AdjointMatrix, R 647
- AdjointModule, R 632
- Advanced Features of GAP, R 30
- Advanced List Manipulations, R 201
- Advanced Methods for Dixon-Schneider
 - Calculations, R 749
- AffineAction, R 445
- AffineActionLayer, R 445
- AffineOperation, R 445
- AffineOperationLayer, R 445
- A First Attempt to Implement Elements of Residue
 - Class Rings, P 44
- Agemo, R 361
- AgGroup, T 79
- Algebra, R 610
- AlgebraByStructureConstants, R 613
- AlgebraGeneralMappingByImages, R 624
- AlgebraHomomorphismByImages, R 624
- AlgebraHomomorphismByImagesNC, R 624
- AlgebraicExtension, R 687
- Algebraic Structure, T 69
- Algebras, T 61
- AlgebraWithOne, R 610
- AlgebraWithOneGeneralMappingByImages, R 625
- AlgebraWithOneHomomorphismByImages, R 625
- AlgebraWithOneHomomorphismByImagesNC, R 625
- AllBlocks, R 403
- AllIrreducibleSolvableGroups, R 525
- AllLibraryGroups, R 513
- AllPrimitiveGroups, R 513
- AllSmallGroups, R 516
- AllTransitiveGroups, R 513
- Alpha, R 819
- AlternatingGroup, R 507
- and, R 167
 - for filters, R 116
- An Example of Advanced Dixon-Schneider
 - Calculations, R 751
- An Example of a GAP Package, E 36
- ANFAutomorphism, R 592
- AntiSymmetricParts, R 784
- antisymmetric relation, R 311
- Append, R 175
- AppendTo, R 94
 - for streams, R 100
- Apple, R 835
- ApplicableMethod, R 77, T 75

- ApplicableMethod, *R* 77
- Applicable Methods and Method Selection, *P* 12
- ApplicableMethodTypes, *R* 77
- Apply, *R* 196
- ApplyFunc, *T* 79
- ApplySimpleReflection, *R* 644
- ApproximateSuborbitsStabilizerPermGroup, *R* 420
- ARCH_IS_MAC, *R* 35
- ARCH_IS_UNIX, *R* 35
- ARCH_IS_WINDOWS, *R* 35
- arg, special function argument, *R* 56
- ArithmeticElementCreator, *P* 42
- Arithmetic for External Representations of Polynomials, *R* 686
- Arithmetic for Lists, *R* 180
- Arithmetic Issues in the Implementation of New Kinds of Lists, *P* 27
- Arithmetic Operations for Class Functions, *R* 766
- Arithmetic Operations for Elements, *R* 292
- Arithmetic Operations for General Mappings, *R* 305
- Arithmetic Operators, *R* 48
- Arrangements, *R* 146
- arrow notation for functions, *R* 57
- AsAlgebra, *R* 619
- AsAlgebraWithOne, *R* 620
- AsBinaryRelationOnPoints, *R* 312
- AsBlockMatrix, *R* 235
- AscendingChain, *R* 367
- AsDivisionRing, *R* 574
- AsDuplicateFreeList, *R* 195
- A Second Attempt to Implement Elements of Residue Class Rings, *P* 46
- AsField, *R* 574
- AsFreeLeftModule, *R* 571
- AsGroup, *R* 346
- AsGroupGeneralMappingByImages, *R* 382
- AsLeftIdeal, *R* 561
- AsLeftModule, *R* 569
- AsList, *R* 267
- AsMagma, *R* 316
- AsMonoid, *R* 541
- AsPolynomial, *R* 668
- AsRightIdeal, *R* 561
- AsRing, *R* 558
- AsSemigroup, *R* 534
- Assert, *R* 80
- AssertionLevel, *R* 80
- Assertions, *R* 80
- AsSet, *R* 267
- AssignGeneratorVariables, *R* 328
- assignment, *T* 22
 - to a list, *R* 173
 - to a record, *R* 258
 - variable, *R* 50
- Assignments, *R* 50
- AssignNiceMonomorphismAutomorphismGroup, *R* 388
- AssociatedPartition, *R* 151
- AssociatedReesMatrixSemigroupOfDClass, *R* 540
- Associates, *R* 564
- associativity, *R* 48
- AssocWordByLetterRep, *R* 333
- AsSomething, *T* 70
- AsSortedList, *R* 267
- AsSSortedList, *R* 267
- AsStruct, *R* 284
- AsSubalgebra, *R* 620
- AsSubalgebraWithOne, *R* 620
- AsSubgroup, *R* 347
- AsSubgroupOfWholeGroupByQuotient, *R* 472
- AsSubmagma, *R* 317
- AsSubmonoid, *R* 541
- AsSubsemigroup, *R* 534
- AsSubspace, *R* 595
- AsSubstruct, *R* 287
- AsTransformation, *R* 551
- AsTransformationNC, *R* 551
- AsTwoSidedIdeal, *R* 561
- AsVectorSpace, *R* 594
- at exit functions, *R* 73
- ATLAS Irrationalities, *R* 158
- AtlasIrrationality, *R* 160
- atomic irrationalities, *R* 158
- Attributes, *R* 120, *T* 72
- Attributes and Operations for Algebras, *R* 618
- Attributes and Properties for (Near-)Additive Magmas, *R* 555
- Attributes and Properties for Collections, *R* 268
- Attributes and Properties for Magmas, *R* 318
- Attributes and Properties for Matrix Groups, *R* 425
- Attributes and Properties of Character Tables, *R* 729
- Attributes and Properties of Elements, *R* 288
- Attributes of and Operations on Equivalence Relations, *R* 313

Attributes of Tables of Marks, *R 704*
 Attributes vs. Record Components, *T 81*
 AttributeValueNotSet, *R 121*
 AugmentationIdeal, *R 659*
 AugmentedCosetTableInWholeGroup, *R 466*
 AugmentedCosetTableMtc, *R 466*
 AugmentedCosetTableRrs, *R 466*
 Augmented Coset Tables and Rewriting, *R 466*
 Authorship and Maintenance, *T 12*
 automatic loading of gap packages, *R 840*
 AutomorphismDomain, *R 387*
 AutomorphismGroup, *R 387*
 for groups with pcgs, *R 446*
 automorphism group, of number fields, *R 592*
 Automorphisms and Equivalence of Character
 Tables, *R 758*
 AutomorphismsOfTable, *R 732*

B

b_N , *R 158*
 backslash character, *R 247*
 backspace character, *R 247*
 Backtrace, *T 86*
 GAP3 name for Where, *R 70*
 Backtrack, *R 422*
 BANNER, *R 845*
 BaseFixedSpace, *R 226*
 BaseIntersectionIntMats, *R 236*
 BaseIntMat, *R 236*
 BaseMat, *R 229*
 BaseMatDestructive, *R 229*
 BaseOfGroup, *N 20*, *R 419*
 BaseOrthogonalSpaceMat, *R 229*
 BasePointOfSchreierTransversal, *N 17*
 Bases of Vector Spaces, *R 596*
 BaseStabChain, *R 419*
 BaseSteinitzVectors, *R 229*
 Basic Actions, *R 393*
 Basic Groups, *R 506*
 Basic Operations for Class Functions, *R 764*
 Basic Operations for Lists, *R 171*
 BasicWreathProductOrdering, *R 280*
 Basis, *R 597*
 BasisNC, *R 597*
 BasisVectors, *R 598*
 Bell, *R 145*
 Bernoulli, *R 145*
 BestQuoInt, *R 128*

BestSplittingMatrix, *R 750*
 BiAlgebraModule, *R 628*
 BiAlgebraModuleByGenerators, *R 628*
 bibtex, *E 26*
 BilinearFormMat, *R 643*
 binary relation, *R 310*
 BinaryRelationByElements, *R 310*
 BinaryRelationOnPoints, *R 312*
 BinaryRelationOnPointsNC, *R 312*
 Binary Relations on Points, *R 312*
 BinaryRelationTransformation, *R 552*
 BindGlobal, *P 31*, *R 45*
 Binomial, *R 144*
 blank, *R 41*
 BlistList, *R 206*
 Block Matrices, *R 235*
 BlockMatrix, *R 235*
 Blocks, *R 403*
 BlocksInfo, *R 737*
 Block Systems, *R 403*
 BlownUpMat, *R 231*
 BlownUpVector, *R 231*
 BlowUpIsomorphism, *R 426*
 BNF, *R 59*
 body, *R 55*
 BombieriNorm, *R 674*
 Boolean Lists Representing Subsets, *R 206*
 bound, *R 43*
 Brauer character, *R 771*
 BrauerCharacterValue, *R 794*
 BrauerTable, *R 723*
 BrauerTableOp, *R 723*
 BravaisGroup, *R 429*
 BravaisSubgroups, *R 429*
 BravaisSupergroups, *R 429*
 Break, *R 55*
 break loop message, *R 69*
 Break Loops, *R 67*
 break loops, *T 20*
 break statement, *R 55*
 browsing backwards, *R 22*
 browsing backwards one chapter, *R 23*
 browsing forward, *R 22*
 browsing forward one chapter, *R 23*
 browsing the next section browsed, *R 23*
 browsing the previous section browsed, *R 23*
 Browsing through the Sections, *R 22*
 bug reports, see If Things Go Wrong, *R 832*

Building new orderings, *R* 276
 buildman.pe, *E* 27

C

C, Category mark-up, *E* 16
 c_N , *R* 158
 Calculating with Group Automorphisms, *R* 388
 Calendar Arithmetic, *R* 254
 CallFuncList, *R* 62
 Calling a function with a list argument that is interpreted as several arguments, *R* 62
 Calling of and Communication with External Binaries, *E* 39
 Cancellation Tests for Rational Functions, *R* 686
 CanComputeIndex, *R* 379
 CanComputeIsSubset, *R* 379
 CanComputeSize, *R* 379
 CanComputeSizeAnySubgroup, *R* 379
 candidates, for permutation characters, *R* 787
 CanEasilyCompareElements, *R* 291
 CanEasilyCompareElementsFamily, *R* 291
 CanEasilyComputePcgs, *R* 432
 CanEasilySortElements, *R* 291
 CanEasilySortElementsFamily, *R* 291
 CanEasilyTestMembership, *R* 379
 CanonicalBasis, *R* 597
 canonical basis, for matrix spaces, *R* 604
 for row spaces, *R* 604
 CanonicalElt, *N* 14
 CanonicalGenerators, *R* 643
 CanonicalPcElement, *R* 434
 CanonicalPcgs, *R* 437
 CanonicalPcgsByGeneratorsWithImages, *R* 439
 CanonicalRepresentativeDeterminatorOf-ExternalSet, *R* 406
 CanonicalRepresentativeOfExternalSet, *R* 406
 CanonicalRightCosetElement, *R* 353
 Carmichael's lambda function, *R* 136
 carriage return character, *R* 247
 CartanMatrix, *R* 642
 CartanSubalgebra, *R* 639
 Cartesian, *R* 197
 Categories, *R* 117
 Categories and Properties of Algebras, *R* 617
 Categories for Streams and the StreamsFamily, *R* 96
 Categories of Associative Words, *R* 326
 Categories of Matrices, *R* 218
 CategoriesOfObject, *R* 119

Categories of Words and Nonassociative Words, *R* 321
 CategoryCollections, *P* 16, *R* 264
 CategoryFamily, *P* 16
 Catering for Plain Text and HTML Formats, *E* 25
 Center, *R* 319
 center, *R* 318
 CentralCharacter, *R* 774
 central character, *R* 774
 CentralIdempotentsOfAlgebra, *R* 622
 centraliser, *R* 318
 Centralizer, *R* 318
 for groups with pcgs, *R* 446
 CentralizerInGLnZ, *R* 429
 CentralizerModulo, *R* 368
 CentralizerSizeLimitConsiderFunction, *R* 447
 CentralNormalSeriesByPcgs, *R* 441
 Centre, *R* 319
 for groups with pcgs, *R* 446
 centre, of a character, *R* 773
 CentreOfCharacter, *R* 773
 CF, *R* 587
 ChainHomomorphicImage, *N* 20
 ChainStatistics, *N* 20
 ChainSubgroup, *N* 19
 ChainSubgroupByDirectProduct, *N* 21
 ChainSubgroupByHomomorphism, *N* 21
 ChainSubgroupByProjectionFunction, *N* 21
 ChainSubgroupByPSubgroupOfAbelian, *N* 21
 ChainSubgroupBySiftFunction, *N* 21
 ChainSubgroupByStabiliser, *N* 20
 ChainSubgroupByTrivialSubgroup, *N* 21
 ChainSubgroupQuotient, *N* 21
 ChangedBaseGroup, *N* 20
 Changed Command Line Options, *T* 77
 Changed Functionality, *T* 78
 Changed Variable Names, *T* 79
 Changes from Earlier Versions, *T* 13
 ChangeStabChain, *R* 421
 Changing Presentations, *R* 485
 Changing the Help Viewer, *R* 23
 Changing the Representation, *R* 285
 Changing the Structure, *R* 284, *T* 70
 Chapters and Sections, *E* 15
 CHAR.INT, *R* 253
 CHAR.SINT, *R* 253
 Character, *R* 769
 Character Conversion, *R* 252

- CharacterDegrees, R 729
- Character Degrees and Derived Length, *R 819*
- Characteristic, R 288
- characteristic, for class functions, R 768
- CharacteristicPolynomial, R 230
- characteristic polynomial, for field elements, R 576
- CharacterNames, R 733
- characters, R 762
 - permutation, R 790
 - symmetrizations of, R 783
- CharacterTable, R 723
- Character Table Categories, *R 725*
- CharacterTableDirectProduct, R 753
- CharacterTableFactorGroup, R 753
- CharacterTableIsoclinic, R 754
- character tables, R 722
 - access to, R 722
 - calculate, R 722
 - infix operators, R 729
 - of groups, R 722
- CharacterTableWithSortedCharacters, R 755
- CharacterTableWithSortedClasses, R 756
- CharacterTableWreathSymmetric, R 755
- character value, of group element using powering operator, R 767
- CharsFamily, R 249
- CharTable, T 79
- CheapFactorsInt, R 133
- CheckFixedPoints, R 808
- CheckForHandlingByNiceBasis, R 609
- CheckPermChar, R 815
- ChevalleyBasis, R 641
- ChiefNormalSeriesByPcgs, R 442
- ChiefSeries, R 365
- ChiefSeriesThrough, R 365
- ChiefSeriesUnderAction, R 365
- ChineseRem, R 129
- Chinese remainder, R 130
- Chomp, R 252
- CIUnivPols, R 666
- ClassElementLattice, R 370
- classes, real, R 734
- ClassesSolvableGroup, R 446
- ClassFunction, R 769
- class function, R 762
- class function objects, R 762
- class functions, R 805
 - as ring elements, R 766
- ClassFunctionSameType, R 770
- Class Fusions between Character Tables, *R 800*
- Classical Groups, *R 508*
- ClassMultiplicationCoefficient, for character tables, R 741
- class multiplication coefficient, R 742
- ClassNames, R 733
- ClassNamesTom, R 705
- ClassOrbit, R 734
- ClassPermutation, R 757
- ClassPositionsOfAgemo, R 735
- ClassPositionsOfCentre, for characters, R 773
 - for character tables, R 735
- ClassPositionsOfDerivedSubgroup, R 735
- ClassPositionsOfDirectProduct-
Decompositions, R 735
- ClassPositionsOfElementaryAbelianSeries,
R 735
- ClassPositionsOfFittingSubgroup, R 735
- ClassPositionsOfKernel, R 773
- ClassPositionsOfLowerCentralSeries, R 735
- ClassPositionsOfMaximalNormalSubgroups,
R 735
- ClassPositionsOfMinimalNormalSubgroups,
R 735
- ClassPositionsOfNormalClosure, R 736
- ClassPositionsOfNormalSubgroup, R 760
- ClassPositionsOfNormalSubgroups, R 735
- ClassPositionsOfSupersolvableResiduum, R 736
- ClassPositionsOfUpperCentralSeries, R 735
- ClassRoots, R 734
- ClassStructureCharTable, R 742
- ClassTypesTom, R 704
- CleanedTailPcElement, R 435
- ClearCacheStats, R 83
- ClearProfile, R 82
- clone, an object, R 113
- CloseMutableBasis, R 602
- CloseStream, R 97
- ClosureGroup, R 349
- ClosureGroupAddElm, R 349
- ClosureGroupCompare, R 349
- ClosureGroupDefault, R 349
- ClosureGroupIntest, R 349
- ClosureLeftModule, R 570
- ClosureNearAdditiveGroup, R 556
- Closure Operations and Other Constructors, *R 312*
- ClosureRing, R 558

- Closures of (Sub)groups, *R 349*
- ClosureSomething, *T 70*
- ClosureStruct, *R 284*
- ClosureSubgroup, *R 349*
- ClosureSubgroupNC, *R 349*
- Coboundaries, *R 652*
- Cochain, *R 651*
- CochainSpace, *R 651*
- Cocycles, *R 652*
- cocycles, *R 375*
- CodePcGroup, *R 457*
- CodePcgs, *R 457*
- Coding a Pc Presentation, *R 457*
- coefficient, binomial, *R 144*
- Coefficient List Arithmetic, *R 213*
- Coefficients, *R 598*
- coefficients, for cyclotomics, *R 156*
- CoefficientsAndMagmaElements, *R 660*
- CoefficientsFamily, *R 683*
- CoefficientsMultiadic, *R 129*
- CoefficientsOfLaurentPolynomial, *R 675*
- CoefficientsOfUnivariatePolynomial, *R 668*
- CoefficientsOfUnivariateRationalFunction, *R 668*
- CoefficientsQadic, *R 129*
- CoefficientsRing, *R 676*
- CoeffsCyc, *R 156*
- CoeffsMod, *R 214*
- cohomology, *R 375*
- COHORTS_PRIMITIVE_GROUPS, *R 523*
- cokernel, *T 55*
- CoKernelOfAdditiveGeneralMapping, *R 307*
- CoKernelOfMultiplicativeGeneralMapping, *R 306*
- CollapsedMat, *R 811*
- Collected, *R 195*
- Collection Families, *R 263*
- CollectionsFamily, *P 20, R 263*
- Coloring the Prompt and Input, *R 38*
- ColorPrompt, *R 38*
- ColumnIndexOfReesMatrixSemigroupElement, *R 540*
- ColumnIndexOfReesZeroMatrixSemigroupElement, *R 540*
- Combinations, *R 146*
- Combinations, Arrangements and Tuples, *R 146*
- CombinatorialCollector, *R 451*
- Combinatorial Numbers, *R 144*
- Comm, *R 292*
- for words, *R 330*
- Command Line Options, *R 27*
- command mark-up, *E 16*
- comments, *R 41, T 19*
- CommutativeDiagram, *R 808*
- CommutatorFactorGroup, *R 368*
- CommutatorLength, *R 359*
- for character tables, *R 731*
- CommutatorSubgroup, *R 358*
- Compacted, *R 194*
- CompanionMat, *R 232*
- CompareVersionNumbers, *R 843*
- comparison, fp semigroup elements, *R 546*
- operation, *R 291*
- rational functions, *R 666*
- Comparison of Associative Words, *R 329*
- Comparison of Class Functions, *R 765*
- Comparison of Elements of Finitely Presented Groups, *R 460*
- Comparison of Elements of Finitely Presented Semigroups, *R 546*
- Comparison of Permutations, *R 408*
- Comparison of Rational Functions, *R 666*
- Comparison of Words, *R 323*
- Comparison Operations for Elements, *R 291*
- Comparisons, *R 47*
- comparisons, of booleans, *R 166*
- of lists, *R 179*
- Comparisons of Booleans, *R 166*
- Comparisons of Cyclotomics, *R 158*
- Comparisons of Lists, *R 179*
- Comparisons of Records, *R 260*
- Comparisons of Strings, *R 249*
- Compatibility Mode, *T 87*
- Compatibility of Residue Class Rings with Prime Fields, *P 56*
- CompatibleConjugacyClasses, *R 727*
- CompatiblePairs, *R 455*
- Compilation, *R 827*
- Compiling Library Code, *R 36*
- Complementclasses, *R 358*
- ComplementclassesEA, *R 377*
- ComplementIntMat, *R 237*
- ComplementSystem, *R 361*
- CompleteSchreierTransversal, *N 17*
- Completion Files, *R 34*
- ComplexConjugate, *R 161*

- for class functions, R 768
- ComplexificationQuat, R 614
- Component Objects, *P 21*
- Components of a Dixon Record, *R 750*
- Components versus Attributes, *P 39*
- CompositionMapping, R 300
 - for Frobenius automorphisms, R 584
- CompositionMapping2, R 300
- CompositionMaps, R 805
- CompositionOfStraightLinePrograms, R 337
- CompositionSeries, R 365
 - for groups with pcgs, R 446
- ComputedBrauerTables, R 723
- ComputedClassFusions, R 801
- ComputedIndicators, R 741
- ComputedIsPSolvableCharacterTables, R 740
- ComputedPowerMaps, R 797
- ComputedPrimeBlockss, R 736
- Computing a Pcgs, *R 432*
- Computing a Permutation Representation, *R 412*
- Computing Pc Groups, *R 452*
- Computing Possible Permutation Characters, *R 790*
- Computing the Irreducible Characters of a Group, *R 746*
- Concatenation, R 194
- concatenation, of lists, R 194
- Conductor, R 156
- ConfluentRws, R 341
- Congruences, for character tables, R 813
- Congruences for semigroups, *R 537*
- ConjugacyClass, R 355
- Conjugacy Classes, *R 355*
- ConjugacyClasses, attribute, R 355
 - for character tables, R 726
 - for groups with pcgs, R 446
 - for linear groups, R 512
- ConjugacyClassesByOrbits, R 356
- ConjugacyClassesByRandomSearch, R 356
- Conjugacy Classes in Classical Groups, *R 512*
- Conjugacy Classes in Solvable Groups, *R 446*
- ConjugacyClassesMaximalSubgroups, R 369
- ConjugacyClassesPerfectSubgroups, R 372
- ConjugacyClassesSubgroups, R 369
- ConjugacyClassSubgroups, R 369
- conjugate, matrix, R 220
 - of a word, R 330
- ConjugateDominantWeight, R 644
- ConjugateDominantWeightWithWord, R 644
- ConjugateGroup, R 346
- Conjugates, R 577
- ConjugateSubgroup, R 348
- ConjugateSubgroups, R 348
- conjugation, R 393
- ConjugatorAutomorphism, R 386
- ConjugatorAutomorphismNC, R 386
- ConjugatorIsomorphism, R 385
- ConjugatorOfConjugatorIsomorphism, R 386
- ConnectGroupAndCharacterTable, R 727
- ConsiderKernels, R 813
- ConsiderSmallerPowerMaps, R 814
- ConsiderStructureConstants, R 805
- ConsiderTableAutomorphisms, R 816
- constants, T 21
- ConstantTimeAccessList, R 190
- constituent, of a group character, R 772
- ConstituentsCompositionMapping, R 301
- ConstituentsOfCharacter, R 773
- Constructing Algebras as Free Algebras, *R 611*
- Constructing Algebras by Generators, *R 610*
- Constructing Algebras by Structure Constants, *R 612*
- Constructing Character Tables from Others, *R 752*
- Constructing Domains, *R 283*
- Constructing Lie algebras, *R 636*
- Constructing Pc Groups, *R 450*
- Constructing Subdomains, *R 287*
- Constructing Tables of Marks, *R 699*
- Constructing Vector Spaces, *R 594*
- Construction of Abelian Number Fields, *R 587*
- Construction of Stabilizer Chains, *R 417*
- Constructors for Basic Groups, *R 512*
- ContainedCharacters, R 812
- ContainedDecomposables, R 812
- ContainedMaps, R 807
- ContainedPossibleCharacters, R 810
- ContainedPossibleVirtualCharacters, R 811
- ContainedSpecialVectors, R 810
- ContainedTom, R 709
- ContainingTom, R 709
- continuation, E 24
- ContinuedFractionApproximationOfRoot, R 140
- ContinuedFractionExpansionOfRoot, R 140
- Continued Fractions, *R 140*
- continue statement, R 55
- Conventions for Character Tables, *R 726*
- convert, to a string, R 248

- Converting Groups to Finitely Presented Groups, *R 468*
- ConvertToCharacterTable, *R 724*
- ConvertToCharacterTableNC, *R 724*
- ConvertToMatrixRep, *R 232*
- ConvertToMatrixRepNC, *R 232*
- ConvertToRangeRep, *R 204*
- ConvertToStringRep, *R 248*
- ConvertToTableOfMarks, *R 703*
- ConvertToVectorRep, *R 212*
- ConvertToVectorRepNC, *R 212*
- ConwayPolynomial, *R 584*
- Conway Polynomials, *R 584*
- coprime, *R 48*
- Copy, *T 80*
- copy, *R 113*
 - an object, *R 113*
- COPY_LIST_ENTRIES, *R 175*
- Copying Weak Pointer Objects, *E 53*
- CopyOptionsDefaults, *R 421*
- Copyrights, *R 839*
- CopyStabChain, *R 421*
- Core, *R 357*
- CorrespondingGeneratorsByModuloPcgs, *R 439*
- coset, *R 352*
- CosetLeadersMatFFE, *R 215*
- Cosets, *R 352*
- CosetTable, *R 462*
- CosetTableBySubgroup, *R 463*
- CosetTableDefaultLimit, *R 464*
- CosetTableDefaultMaxLimit, *R 464*
- CosetTableFromGensAndRels, *R 463*
- CosetTableInWholeGroup, *R 466*
- CosetTableOfFpSemigroup, *R 549*
- Coset Tables and Coset Enumeration, *R 462*
- Coset tables for subgroups in the whole group, *R 466*
- CosetTableStandard, *R 465*
- CRC, *R 37*
- CrcFile, *R 94*
 - example, *R 37*
- CRC Numbers, *R 37*
- CreateCompletionFiles, *R 34*
- CreateCompletionFilesPackage, *E 40*
- CreateCompletionFilesPkg, *R 844*
- Creating Attributes and Properties, *P 17*
- Creating Categories, *P 16*
- Creating Character Tables, *R 722*
- Creating Class Functions from Values Lists, *R 769*
- Creating Class Functions using Groups, *R 770*
- Creating Families, *P 18*
- Creating Finite Fields, *R 582*
- Creating Finitely Presented Groups, *R 459*
- Creating Finitely Presented Semigroups, *R 545*
- Creating Group Homomorphisms, *R 380*
- Creating Groups, *R 345*
- Creating hom cosets and quotient groups, *N 14*
- Creating Mappings, *R 300*
- Creating Objects, *P 20*
- Creating Operations, *P 18*
- Creating Other Filters, *P 18*
- Creating Own Arithmetic Objects, *P 41*
- Creating Permutations, *R 410*
- Creating Presentations, *R 477*
- Creating Representations, *P 17*
- Creating Types, *P 20*
- Creation of Algebraic Extensions, *R 687*
- Creation of Rational Functions, *R 685*
- Credit, *R 21*
- CrystGroupDefaultAction, *R 430*
- Cycle, *R 401*
- CycleLength, *R 401*
- CycleLengths, *R 401*
- Cycles, *R 401*
- CycleStructureClass, *R 774*
- CycleStructurePerm, *R 409*
- CyclicExtensionsTom, *R 709*
- CyclicGroup, *R 506*
- CyclotomicField, *R 587*
- cyclotomic field elements, *R 154*
- cyclotomic fields, canonicalbasis, *R 590*
- CyclotomicPolynomial, *R 672*
- Cyclotomic Polynomials, *R 672*
- Cyclotomics, *R 154*
- cyclotomics, defaultfield, *R 588*
- D**
- d_N , *R 158*
- Darstellungsgruppe, see *EpimorphismSchurCover*, *R 378*
- DataType, *R 124*
- data type, unknown, *R 164*
- DayDMY, *R 255*
- DaysInMonth, *R 254*
- DaysInYear, *R 254*
- Debugging, *T 86*
- Debugging Recursion, *R 84*

- DEC, R 240
- Declaration and Implementation Part, *E 38, P 33*
- DeclareAttribute, P 31
 - example, P 41
- DeclareAutoPackage, R 844
- DeclareAutoreadableVariables, E 40
- DeclareAutoreadableVariables, *E 40*
- DeclareCategory, P 31
- DeclareFilter, P 31
- DeclareGlobalFunction, P 31
- DeclareGlobalVariable, P 32
- DeclareHandlingByNiceBasis, R 608
- DeclareInfoClass, R 79
- DeclareOperation, P 31
- DeclarePackage, R 844
- DeclarePackageAutoDocumentation, R 844
- DeclarePackageDocumentation, R 844
- DeclareProperty, P 31
- DeclareRepresentation, P 31
 - belongs to implementation part, P 33
 - example, P 38
- DeclareSynonym, P 32
- DeclareSynonymAttr, P 32
- DecodeTree, R 495
- DecodeTree, *R 495*
- decompose, a group character, R 772
- DecomposedFixedPointVector, R 709
- DecomposeTensorProduct, R 653
- Decomposition, R 240
- DecompositionInt, R 241
- DecompositionMatrix, R 738
- decomposition matrix, R 240
- Decompositions, *R 240*
- Decreased, R 781
- DefaultField, R 574
 - for cyclotomics, R 157
 - for finite field elements, R 582
- DefaultFieldByGenerators, R 574
- DefaultFieldOfMatrix, R 221
- DefaultFieldOfMatrixGroup, R 425
- DefaultRing, R 557
 - for finite field elements, R 582
- DefaultRingByGenerators, R 558
- DefaultStabChainOptions, R 418
- Defining a Pcgs Yourself, *R 432*
- DefiningPolynomial, R 575
- DefiningQuotientHomomorphism, R 472
- DegreeFFE, R 581
- DegreeIndeterminate, R 670
- DegreeOfBinaryRelation, R 311
- DegreeOfCharacter, R 772
- DegreeOfLaurentPolynomial, R 669
- DegreeOfTransformation, R 550
- DegreeOfTransformationSemigroup, R 536
- DegreeOverPrimeField, R 575
- Delta, R 819
- Denominator, T 79
 - denominator, of a rational, R 143
- DenominatorCyc, R 157
- DenominatorOfModuloPcgs, R 438
- DenominatorOfRationalFunction, R 668
- DenominatorRat, R 143
- DenseHashTable, N 11
- Dense hash tables, *N 11*
- DenseIntKey, N 11
- deprecated, R 844
- DepthOfPcElement, R 434
- DepthOfUpperTriangularMatrix, R 230
- DepthVector, T 79
- Derangements, R 148
- Derivations, R 637
- Derivative, R 671
- DerivedLength, R 366
- DerivedSeriesOfGroup, R 366
- DerivedSubgroup, R 358
- DerivedSubgroupsTom, R 708
- DerivedSubgroupsTomPossible, R 708
- DerivedSubgroupsTomUnique, R 708
- DerivedSubgroupTom, R 708
- DescriptionOfRootOfUnity, R 157
- Designing new Multiplicative Objects, *P 64*
- Determinant, R 222
 - determinant character, R 774
- DeterminantIntMat, R 240
- DeterminantMat, R 222
- DeterminantMatDestructive, R 222
- DeterminantMatDivFree, R 222
- Determinant of an integer matrix, *R 240*
- DeterminantOfCharacter, R 774
- Developing rewriting systems, *R 343*
- DiagonalizeIntMat, R 238
- DiagonalizeMat, R 227
- DiagonalMat, R 223
- DiagonalOfMat, R 230
- Dictionaries, *N 9*
- DictionaryByPosition, N 10

- Difference, R 271
 - DifferenceBlist, R 207
 - Different Notions of Generation, *T* 81
 - DihedralGroup, R 507
 - Dimension, R 571
 - DimensionOfHighestWeightModule, R 653
 - DimensionOfMatrixGroup, R 425
 - DimensionOfVectors, R 603
 - DimensionsLoewyFactors, R 367
 - DimensionsMat, R 221
 - Directories, *R* 90
 - DirectoriesLibrary, R 90
 - DirectoriesPackageLibrary, R 842
 - DirectoriesPackagePrograms, R 843
 - DirectoriesSystemPrograms, R 91
 - Directory, R 90
 - DirectoryContents, R 91
 - DirectoryCurrent, R 90
 - DirectoryTemporary, R 90
 - DirectProduct, R 500
 - Direct product chain subgroups, *N* 21
 - DirectProductOp, R 500
 - Direct Products, *R* 500
 - DirectSumDecomposition, R 622
 - for Lie algebras, R 641
 - Direct Sum Decompositions, *R* 641
 - DirectSumOfAlgebraModules, R 633
 - for Lie algebras, R 656
 - DirectSumOfAlgebras, R 621
 - DisableAttributeValueStoring, R 122
 - disable automatic loading, R 840
 - Discriminant, R 671
 - Display, R 66
 - for character tables, R 742
 - for tables of marks, R 701
 - DisplayCacheStats, R 83
 - DisplayCompositionSeries, R 365
 - DisplayEggBoxOfDClass, R 538
 - DisplayImfInvariants, R 527
 - DisplayInformationPerfectGroups, R 520
 - DisplayOptions, R 744
 - DisplayOptionsStack, R 88
 - DisplayProfile, R 82
 - DisplayRevision, R 83
 - DistancesDistributionMatFFVecFFE, R 215
 - DistancesDistributionVecFFesVecFFE, R 215
 - DistanceVecFFE, R 215
 - Distinguished Subalgebras, *R* 638
 - division, R 48
 - operation, R 292
 - DivisionRingByGenerators, R 574
 - division rings, R 573
 - divisors, of an integer, R 133
 - DivisorsInt, R 133
 - Dixon-Schneider algorithm, R 749
 - DixonInit, R 749
 - DixonRecord, R 749
 - DixonSplit, R 750
 - DixontinI, R 749
 - DMYDay, R 255
 - DMYhmsSeconds, R 256
 - DnLattice, R 782
 - DnLatticeIterative, R 783
 - do, R 53
 - document formats, for help books, *E* 43
 - document formats (text, dvi, ps, pdf, html), *R* 23
 - Domain, R 288
 - DomainByGenerators, R 288
 - Domain Categories, *R* 285
 - Domain Constructors, *T* 70
 - Domains, *R* 110
 - Domains as Sets, *T* 68
 - Domains Generated by Class Functions, *R* 795
 - Domains of Subspaces of Vector Spaces, *R* 596
 - DominantCharacter, R 652
 - DominantWeights, R 652
 - DoubleCoset, R 354
 - DoubleCosetRepsAndSizes, R 355
 - Double Cosets, *R* 354
 - DoubleCosets, operation, R 354
 - DoubleCosetsNC, operation, R 354
 - DoubleHashArraySize, *N* 11
 - doublequote character, R 247
 - doublequotes, R 245
 - DownEnv, R 71, *T* 86
 - Dummy Streams, *R* 105
 - duplicate free, R 190
 - DuplicateFreeList, R 195
 - Duplication of Lists, *R* 177
 - Duplication of Objects, *R* 113
 - DxIncludeIrreducibles, R 750
- E**
- E*, R 154
 - e_N , R 158
 - EANormalSeriesByPcgs, R 440

- Earns, R 402
- EB, R 158
- EC, R 158
- Echelonized Matrices, *R 227*
- ED, R 158
- Edit, R 74
- Editing Files, *R 74*
- Editor Support, *R 75*
- EE, R 158
- EF, R 158
- Efficiency of Homomorphisms, *R 383*
- EG, R 158
- EggBoxOfDClass, R 538
- EH, R 158
- EI, R 159
- Eigenspaces, R 226
- Eigenvalues, R 226
- EigenvaluesChar, R 775
- Eigenvectors, R 226
- Eigenvectors and eigenvalues, *R 226*
- EJ, R 159
- EK, R 159
- EL, R 159
- ElementaryAbelianGroup, R 507
- ElementaryAbelianSeries, R 366
- ElementaryAbelianSeriesLargeSteps, R 366
- Elementary Divisors, *R 227*
- ElementaryDivisorsMat, R 227
- ElementaryDivisorsMatDestructive, R 227
- Elementary Operations for a Pcgs, *R 433*
- Elementary Operations for a Pcgs and an Element, *R 434*
- Elementary Operations for Integers, *R 126*
- Elementary Operations for Rationals, *R 142*
- Elementary Tietze Transformations, *R 488*
- ElementOfFpGroup, R 461
- ElementOfFpSemigroup, R 547
- ElementOfMagmaRing, R 660
- ElementOrdersPowerMap, R 798
- ElementProperty, R 422
- Elements, R 268, T 79
- elements, T 24
 - definition, R 109
 - of a list or collection, R 268
- Elements as equivalence classes, *R 109*
- ElementsFamily, P 20, R 263
- Elements in Algebraic Extensions, *R 687*
- Elements of Finitely Presented Groups, *T 84*
- Elements of Free Magma Rings, *R 660*
- Elements of pc groups, *R 449*
- ElementsStabChain, R 420
- Elements with Prescribed Images, *R 398*
- element test, for lists, R 179
- elif, R 51
- EliminatedWord, R 331
- EliminationOrdering, R 680
- ElmWPObj, E 52
- else, R 51
- EM, R 159
- emacs, R 75
- email addresses, T 16
- Embedding, R 301
 - example for direct products, R 500
 - example for semidirect products, R 502
 - example for wreath products, R 503
 - for group products, R 505
 - for Lie algebras, R 636
 - for magma rings, R 660
- embeddings, find all, R 389
- Embeddings and Projections for Group Products, *R 505*
- EmptyBinaryRelation, R 310
- EmptyMatrix, R 223
- EmptySCTable, R 612
- EmptyStabChain, R 421
- EnableAttributeValueStoring, R 122
- End, R 606
- end, R 55
- Enforcing Property Tests, *P 36*
- Enlarging Internally Represented Lists, *R 179*
- Enumerator, R 264
- enumerator, T 49
- EnumeratorByBasis, R 599
- EnumeratorByFunctions, R 265
- Enumerators, *R 204*
- EnumeratorSorted, R 264
- environment, R 55
- EpimorphismFromFreeGroup, R 349
- EpimorphismNilpotentQuotient, R 473
- EpimorphismPGroup, R 473
- EpimorphismQuotientSystem, R 473
- epimorphisms, find all, R 389
- EpimorphismSchurCover, R 378
- equality, associative words, R 329
 - elements of finitely presented groups, R 460
 - nonassociative words, R 323

- of records, R 260
 - operation, R 291
 - pcwords, R 449
- Equality and Comparison of Domains, *R 283*
- equality test, R 47
 - for permutations, R 408
- equivalence class, R 314
- Equivalence Classes, *R 314*
- EquivalenceClasses, attribute, R 314
- EquivalenceClassOfElement, R 314
- EquivalenceClassOfElementNC, R 314
- EquivalenceClassRelation, R 314
- equivalence relation, R 311
- EquivalenceRelationByPairs, R 313
- EquivalenceRelationByPairsNC, R 313
- EquivalenceRelationByPartition, R 313
- EquivalenceRelationByPartitionNC, R 313
- EquivalenceRelationByProperty, R 313
- EquivalenceRelationByRelation, R 313
- EquivalenceRelationPartition, R 313
- Equivalence Relations, *R 313*
- ER, R 159
- Error, R 72
- Error, *R 72*
- ErrorCount, R 72
- ErrorCount, *R 72*
- ErrorNoTraceBack, R 68
- errors, syntax, R 64
- ES, R 159
- escaped characters, R 247
- escaping non-special characters, R 247
- ET, R 159
- EU, R 159
- EuclideanDegree, R 565
- EuclideanQuotient, R 565
- EuclideanRemainder, R 566
- Euclidean Rings, *R 565*
- Euler's totient function, R 135
- EulerianFunction, R 364
- EulerianFunctionByTom, R 710
- EV, R 159
- EvalStraightLineProgElm, R 339
- EvalString, R 254
- evaluation, R 42
 - strings, R 253
- EW, R 159
- EX, R 159
- ExactSizeConsiderFunction, R 374
- Example – Constructing Enumerators, *P 24*
- Example – Constructing Iterators, *P 26*
- Example: Groups with a decomposition as semidirect product, *P 41*
- Example: Groups with a word length, *P 41*
- Example: M-groups, *P 40*
- Examples, Lists, and Verbatim, *E 20*
- Exec, R 108
- Exec, *R 108*
- execution, R 49
- exit, R 73
- expanded form of monomials, R 684
- Expert Windows installation, *R 838*
- Exponent, R 364
 - for character tables, R 731
- exponent, of the prime residue group, R 136
- exponentiation, operation, R 292
- ExponentOfPcElement, R 434
- ExponentsConjugateLayer, R 435
- ExponentsOfCommutator, R 435
- ExponentsOfConjugate, R 435
- ExponentsOfPcElement, R 434
- ExponentsOfRelativePower, R 435
- Exponents of Special Products, *R 435*
- ExponentSumWord, R 330
- ExponentSyllable, R 332
- Expressing Group Elements as Words in Generators, *R 349*
- Expressions, *R 42*
- ExtendedGroup, N 20
- ExtendedPcgs, R 437
- Extending the Range of Definition of an Existing Operation, *P 35*
- ExtendSchreierTransversal, N 17
- ExtendSchreierTransversalShortCube, N 17
- ExtendSchreierTransversalShortTree, N 17
- ExtendStabChain, R 421
- Extension, R 454
- ExtensionNC, R 454
- ExtensionRepresentatives, R 455
- Extensions, R 454
- Extensions of the p-adic Numbers, *R 690*
- ExteriorPowerOfAlgebraModule, R 656
- ExternalOrbit, R 405
- ExternalOrbits, R 405
- ExternalOrbitsStabilizers, R 405
- External Representation, *P 28*

- External Representation for Nonassociative Words, *R 325*
- external representation of polynomials, *R 684*
- ExternalSet**, *E 48, R 404*
- external set, *T 48*
- External Sets, *R 404*
- ExternalSubset**, *R 405*
- Extract**, *R 779*
- ExtraspecialGroup**, *R 507*
- ExtRepDenominatorRatFun**, *R 684*
- ExtRepNumeratorRatFun**, *R 684*
- ExtRepOfObj**, *P 29*
 - external representation, for cyclotomics, *R 157*
- ExtRepPolynomialRatFun**, *R 684*
- EY**, *R 159*
- F**
- F**, Function mark-up, *E 16*
- f_N , *R 158*
- FactorCosetAction**, *R 400*
 - for fp groups, *R 463*
- FactorCosetOperation**, *R 463*
- FactorFreeSemigroupByRelations**, *R 545*
- FactorGroup**, *R 368*
- FactorGroupFpGroupByRels**, *R 459*
- FactorGroupNC**, *R 368*
- FactorGroupNormalSubgroupClasses**, *R 760*
- Factor Groups**, *R 368*
- Factor Groups of Polycyclic Groups - Modulo PcgS**, *R 438*
- Factor Groups of Polycyclic Groups in their Own Representation**, *R 439*
- FactorGroupTom**, *R 710*
- Factorial**, *R 144*
- Factorization**, *R 350*
- factorization, *R 349*
- Factors**, *R 565*
 - of univariate polynomial, *R 673*
- FactorsInt**, *R 131*
- FactorsOfDirectProduct**, *R 753*
- FactorsSquarefree**, *R 673*
- Fail**, *R 166, T 77*
- fail**, *R 166*
- fail instead of false, *T 77*
- FaithfulModule**, *R 632*
 - for Lie algebras, *R 650*
- Families**, *R 115*
- FamiliesOfGeneralMappingsAndRanges**, *R 309*
- FamiliesOfRows**, *R 759*
- family, *T 31*
- FamilyForOrdering**, *R 277*
- FamilyObj**, *R 115*
- FamilyPcgs**, *R 449*
- FamilyRange**, *R 309*
- FamilySource**, *R 309*
- FAQ**, *R 831*
- Fast access to last hash index, *N 12*
- features, under UNIX, *R 27*
- fi**, *R 51*
- Fibonacci**, *R 152*
- Fibonacci and Lucas Sequences**, *R 152*
- Field**, *R 573*
- FieldExtension**, *R 575*
- field homomorphisms, Frobenius, *R 584*
- FieldOfMatrixGroup**, *R 425*
- FieldOverItselfByGenerators**, *R 575*
- fields, *R 573*
- File Access**, *R 92*
- FileDescriptorOfStream**, *R 97*
- Filename**, *R 91*
- Filename**, *R 91*
- File Operations**, *R 93*
- File Streams**, *R 102*
- File Structure**, *E 32*
- File Types**, *E 32*
- Filtered**, *R 198*
- Filters**, *R 116*
- filters, *T 73*
- Filters Controlling the Arithmetic Behaviour of Lists**, *R 181*
- Finding Implementations in the Library**, *E 33*
- Finding Positions in Lists**, *R 187*
- Finding Submodules**, *R 693*
- FindS12**, *R 648*
- Finish Installation and Cleanup**, *R 829*
- Finite Field Elements**, *R 579*
- Finitely Presented Lie Algebras**, *R 648*
- Finitely presented monoids**, *R 547*
- finiteness test, for a list or collection, *R 268*
- Finite Perfect Groups**, *R 518*
- First**, *R 199*
- FittingSubgroup**, *R 359*
- Flat**, *R 195*
- FlushCaches**, *P 33*
- flush character, *R 247*
- foa triples, *E 46*

- For, *R 53*
- ForAll, *R 199*
- For and While Loops, *T 33*
- ForAny, *R 199*
- for loop, *R 53*
- Forming Closures of Domains, *T 70*
- FpElmComparisonMethod, *R 460*
- FpGroupPresentation, *R 478*
- FpGrpMonSmsgOfFpGrpMonSmsgElement, *R 545*
- FpLieAlgebraByCartanMatrix, *R 649*
- frame, *R 784*
- FrattiniSubgroup, *R 359*
 - for groups with pcgs, *R 446*
- FreeAlgebra, *R 611*
- FreeAlgebraWithOne, *R 611*
- FreeAssociativeAlgebra, *R 611*
- FreeAssociativeAlgebraWithOne, *R 611*
- FreeGeneratorsOfFpGroup, *R 460*
- FreeGeneratorsOfFpSemigroup, *R 546*
- FreeGeneratorsOfWholeGroup, *R 460*
- FreeGroup, *R 327*
- FreeGroupOfFpGroup, *R 460*
- Free Groups, Monoids and Semigroups, *R 327*
- FreeLeftModule, *R 571*
- FreeLieAlgebra, *R 637*
- FreeMagma, *R 324*
- FreeMagmaRing, *R 659*
- Free Magma Rings, *R 659*
- Free Magmas, *R 324*
- FreeMagmaWithOne, *R 324*
- Free Modules, *R 571*
- FreeMonoid, *R 542*
 - with example, *R 327*
- FreeMonoidOfRewritingSystem, *R 549*
- FreeProduct, *R 505*
- Free Products, *R 505*
- FreeSemigroup, *R 327*
 - with examples, *R 535*
- FreeSemigroupOfFpSemigroup, *R 546*
- FreeSemigroupOfRewritingSystem, *R 549*
- Frobenius automorphism, *R 584*
- FrobeniusAutomorphism, *R 584*
- FrobeniusAutomorphism, *R 584*
- FrobeniusCharacterValue, *R 794*
- FullMatrixAlgebra, *R 614*
- FullMatrixAlgebraCentralizer, *R 622*
- FullMatrixLieAlgebra, *R 637*
- FullMatrixModule, *R 572*
- FullMatrixSpace, *R 603*
- FullRowModule, *R 572*
- FullRowSpace, *R 603*
- FullTransformationSemigroup, *R 536*
- Function, *R 55*
- function, *R 55*
- FunctionAction, *R 404*
- function call, *R 46*
 - with arguments, *R 46*
 - with options, *R 47*
- Function Calls, *R 46*
- FunctionOperation, *R 844*
- functions, *R 299*
 - definition by arrow notation, *R 57*
 - definition of, *R 55*
 - recursive, *R 55*
 - with a variable number of arguments, *R 46*
- FunctionsFamily, *R 63*
- Functions for Coding Theory, *R 215*
- Functions for GAP Packages, *R 841*
- Functions that do nothing, *R 63*
- Function that Modify Boolean Lists, *R 208*
- Function Types, *R 63*
- Further Improvements in Implementing Residue Class Rings, *P 61*
- Further Information about Domains, *T 71*
- Further Information about Functions, *T 43*
- Further Information about GAP, *T 16*
- Further Information about Groups and Homomorphisms, *T 58*
- Further Information about Lists, *T 39*
- Further Information about Vector Spaces and Algebras, *T 67*
- Further Information introducing the System, *T 26*
- FusionCharTableTom, *R 716*
- FusionConjugacyClasses, *R 801*
- FusionConjugacyClassesOp, *R 801*
- fusions, *R 800*
- FusionsAllowedByRestrictions, *R 816*
- FusionsTom, *R 705*
- G**
- G*-sets, *E 48*, *R 404*
- g_N , *R 158*
- gac, *R 35*
- Galois Action, *R 575*
- Galois Conjugacy of Cyclotomics, *R 161*
- GaloisCyc, *R 161*

- for class functions, R 768
- GaloisField, R 583
- GaloisGroup, of field, R 576
 - of rational class of a group, R 357
- Galois Groups of Abelian Number Fields, R 592
- GaloisMat, R 162
- GaloisStabilizer, R 589
- GaloisType, R 674
- gap.rc, R 33
- GAP3, R 34
- Gap3CatalogueIdGroup, R 516
- GAPDocManualLab, E 41
- GAP for Macintosh OS X, R 835
- GAP for MacOS, R 836
- GAPInfo, R 845
- GAPInfo.RootPaths, R 29
- GAPInfo.Version, E 40
- GapInputPcGroup, R 453
- GapInputSCTable, R 612
- GAPKB_REW, R 548
- gapmacro.tex, E 11
- GAP Root Directory, R 89
- GasmanLimits, R 86
- GasmanMessageStatus, R 86
- GasmanStatistics, R 86
- Gaussian algorithm, R 225
- GaussianIntegers, R 593
- GaussianRationals, R 588
- Gaussians, R 593
- Gcd, R 566
- Gcd and Lcm, R 566
- Gcdex, R 129
- GcdInt, R 128
- GcdOp, R 566
- GcdRepresentation, R 566
- GcdRepresentationOp, R 567
- General Binary Relations, R 310
- General hash table definitions and operations, N 10
- General Hash Tables, N 10
- GeneralisedEigenspaces, R 226
- GeneralisedEigenvalues, R 226
- generalized characters, R 762
- Generalized Conjugation Technique, E 54
- generalized conjugation technique, E 54
- GeneralizedEigenspaces, R 226
- GeneralizedEigenvalues, R 226
- GeneralLinearGroup, R 509
- GeneralMappingByElements, R 300
- General Mappings, R 308
- GeneralMappingsFamily, R 309
- General operations on transversals, N 16
- GeneralOrthogonalGroup, R 510
- GeneralUnitaryGroup, R 509
- Generating Fields, R 573
- Generating modules, R 569
- Generating Rings, R 557
- GeneratingSetIsComplete, N 19
- generator, of the prime residue group, R 137
- GeneratorsOfAdditiveGroup, R 555
- GeneratorsOfAdditiveMagma, R 555
- GeneratorsOfAdditiveMagmaWithZero, R 555
- GeneratorsOfAlgebra, R 618
- GeneratorsOfAlgebraModule, R 629
- GeneratorsOfAlgebraWithOne, R 618
- GeneratorsOfDivisionRing, R 574
- GeneratorsOfDomain, R 288
- GeneratorsOfEquivalenceRelationPartition, R 313
- GeneratorsOfField, R 574
- GeneratorsOfGroup, R 346
- GeneratorsOfIdeal, R 560
- GeneratorsOfLeftIdeal, R 561
- GeneratorsOfLeftModule, R 569
- GeneratorsOfLeftOperatorAdditiveGroup, R 569
- GeneratorsOfLeftVectorSpace, R 595
- GeneratorsOfMagma, R 318
- GeneratorsOfMagmaWithInverses, R 318
- GeneratorsOfMagmaWithOne, R 318
- GeneratorsOfMonoid, R 541
- GeneratorsOfNearAdditiveGroup, R 555
- GeneratorsOfNearAdditiveMagma, R 555
- GeneratorsOfNearAdditiveMagmaWithZero, R 555
- GeneratorsOfPresentation, R 477
- GeneratorsOfRightIdeal, R 561
- GeneratorsOfRightModule, R 570
- GeneratorsOfRightOperatorAdditiveGroup, R 570
- GeneratorsOfRing, R 558
- GeneratorsOfRingWithOne, R 562
- GeneratorsOfRws, R 341
- GeneratorsOfSemigroup, R 535
- GeneratorsOfSomething, T 69
- GeneratorsOfStruct, R 284
- GeneratorsOfTwoSidedIdeal, R 560
- GeneratorsOfVectorSpace, R 595
- GeneratorsPrimeResidues, R 136

GeneratorsSmallest, R 375
 GeneratorsSubgroupsTom, R 714
 GeneratorSyllable, R 332
 Generic Construction of Tables of Marks, R 718
 GetFusionMap, R 802
 GetHashEntry, N 10
 GetHashEntryAtLastIndex, N 12
 GetHashEntryIndex, N 11
 getter, of an attribute, T 72
 Get the Archives, R 826
 getting help, T 22
 GF, R 583
 GL, R 509
 GL and SL, R 426
 Global Memory Information, R 86
 Global Variables in the Library, P 31
 GModuleByMats, R 692
 GO, R 510
 GQuotients, R 389
 Grading, R 623
 Green's Relations, R 537
 GreensDClasses, R 539
 GreensDClassOfElement, R 538
 GreensDRelation, R 538
 GreensHClasses, R 539
 GreensHClassOfElement, R 538
 GreensHRelation, R 538
 GreensJClasses, R 539
 GreensJClassOfElement, R 538
 GreensJRelation, R 538
 GreensLClasses, R 539
 GreensLClassOfElement, R 538
 GreensLRelation, R 538
 GreensRClasses, R 539
 GreensRClassOfElement, R 538
 GreensRRelation, R 538
 Groebner Bases, R 681
 GroebnerBasis, R 681
 GroebnerBasisNC, R 681
 Group, R 345
 group actions, R 392
 operations syntax, R 392
 Group Actions - Name Changes, R 844
 group algebra, R 658
 Group Automorphisms, R 385
 GroupByRws, R 451
 GroupByRwsNC, R 451
 group characters, R 762

Group Elements, R 345
 group general mapping, T 55
 single-valued, T 55
 total, T 55
 GroupGeneralMappingByImages, R 381
 GroupHClassOfGreensDClass, R 539
 GroupHomomorphismByFunction, R 381
 GroupHomomorphismByImages, R 380
 GroupHomomorphismByImagesNC, R 380
 GroupHomomorphismByImages vs. GroupGeneralMappingByImages, T 55
 Group Homomorphisms, Group Homomorphisms, by Images, T 54
 GroupOfPcgs, R 433
 group operations, R 844
 Group Properties, R 362
 GroupRing, R 659
 group ring, R 658
 Groups of Automorphisms, R 387
 GroupStabChain, R 420
 GroupWithGenerators, R 346
 GU, R 509

H

h_N , R 158
 HallSubgroup, R 360
 HallSystem, R 361
 for groups with pcgs, R 446
 Handling of Streams in the Background, R 105
 HasAbelianFactorGroup, R 368
 HasChainHomomorphicImage, N 20
 HasElementaryAbelianFactorGroup, R 368
 HashFunct, N 11
 HashKeyEnumerator, N 10
 Hash keys, N 11
 HasIndeterminateName, R 665
 HasParent, R 286
 HasseDiagramBinaryRelation, R 312
 HeadPcElementByNumber, R 435
 Help, T 25
 HELP_ADD_BOOK, E 42
 HenselBound, R 674
 hermite normal form, R 845
 HermiteNormalFormIntegerMat, R 238
 HermiteNormalFormIntegerMatTransform, R 238
 HeuristicCancelPolynomials, R 686
 HexStringInt, R 250
 HighestWeightModule, R 655

History of Character Theory Stuff in GAP, *R 721*
HMSMSec, *R 255*
Hom, *R 606*
HomCoset, *N 14*
Hom coset chain subgroups, *N 21*
HomCosetWithImage, *N 14*
HomeEnumerator, *R 404*
Homomorphism, for quotient groups by
 homomorphisms, *N 14*
 for subgroup transversals, *N 17*
homomorphism, action, *T 48*
 natural, *T 45*
 operation, *T 48*
Homomorphism for very large groups, *R 384*
HomomorphismQuotientSemigroup, *R 537*
homomorphisms, find all, *R 389*
homomorphisms, Frobenius, field, *R 584*
Homomorphisms of Algebras, *R 624*
Homomorphisms vs. Factor Structures, *T 83*
Homomorphisms vs. General Mappings, *T 83*
HomomorphismTransformationSemigroup, *R 536*
HomTransversal, *N 17*
How to Implement New Kinds of Vector Spaces,
R 608
HumanReadableDefinition, *R 712*

I

i_N , *R 159*
Ideal, *R 559*
IdealByGenerators, *R 560*
IdealNC, *R 560*
Ideals, *R 616*
Ideals in Rings, *R 559*
Ideals of semigroups, *R 536*
Idempotents, *R 319*
IdempotentsTom, *R 705*
IdempotentsTomInfo, *R 705*
Identical Lists, *R 176, T 29*
Identical Objects, *R 110*
Identical Records, *R 259*
IdentificationOfConjugacyClasses, *R 727*
Identifier, for character tables, *R 733*
 for tables of marks, *R 706*
identifier, *T 22*
Identifiers, *R 42*
Identity, *R 288*
IdentityBinaryRelation, *R 310*
IdentityFromSCTable, *R 613*

IdentityMapping, *R 301*
IdentityMat, *R 223*
IdentityTransformation, *R 550*
IdFunc, *R 63*
IdGap3SolvableGroup, *R 516*
IdGroup, *R 516*
IdSmallGroup, *R 516*
IdsOfAllSmallGroups, *R 516*
If, *R 51*
if statement, *R 51*
If Statements, *T 41*
If Things Go Wrong, *R 831*
Image, *R 303*
 for Frobenius automorphisms, *R 584*
image, vector under matrix, *R 220*
ImageElm, *R 303*
ImageElt, *N 14*
ImageGroup, *N 18*
ImageListOfTransformation, *R 551*
Images, *R 303*
ImagesElm, *R 302*
ImageSetOfTransformation, *R 551*
ImagesRepresentative, *R 302*
ImagesSet, *R 302*
ImagesSmallestGenerators, *R 384*
ImagesSource, *N 15, R 302*
Images under Mappings, *R 302*
ImfInvariants, *R 529*
ImfMatrixGroup, *R 530*
ImfNumberQClasses, *R 527*
ImfNumberQQClasses, *R 527*
ImfNumberZClasses, *R 527*
Immediate Methods, *P 13*
Immutability, *T 30*
Immutable, *R 112*
ImmutableBasis, *R 602*
ImmutableMatrix, *R 232*
Immutable Objects, *T 80*
Implementing New List Objects, *P 23*
in, for collections, *R 272*
 for lists, *R 179*
 for strictly sorted lists, *R 192*
 operation for, *R 272*
IndependentGeneratorsOfAbelianGroup, *R 375*
Indeterminate, *R 664*
IndeterminateName, *R 665*
Indeterminateness, *R 810*

- IndeterminateNumberOfLaurentPolynomial, R 675
- IndeterminateNumberOfUnivariateRationalFunction, R 665
- IndeterminateOfUnivariateRationalFunction, R 665
- Indeterminates, *R 664*
- IndeterminatesOfPolynomialRing, R 676
- Index, R 347
- indexing commands, E 16
- IndexInWholeGroup, R 347
- IndexNC, R 347
- Index numbers of primitive groups, *R 524*
- Indicator, R 741
- IndicatorOp, R 741
- IndicesCentralNormalSteps, R 440
- IndicesChiefNormalSteps, R 441
- IndicesEANormalSteps, R 440
- IndicesInvoluntaryGenerators, R 465
- IndicesNormalSteps, R 442
- IndicesOfAdjointBasis, R 619
- IndicesPCentralNormalStepsPGroup, R 441
- IndicesStabChain, R 420
- Indirected, R 806
- Induced Actions, *R 694*
- InducedAutomorphism, R 388
- InducedClassFunction, R 776
- InducedClassFunctions, R 776
- InducedCyclic, R 777
- InducedPcgs, R 436
- InducedPcgsByGenerators, R 436
- InducedPcgsByGeneratorsNC, R 436
- InducedPcgsByPcSequence, R 436
- InducedPcgsByPcSequenceAndGenerators, R 437
- InducedPcgsByPcSequenceNC, R 436
- InducedPcgsWrtFamilyPcgs, R 449
- InducedPcgsWrtSpecialPcgs, R 444
- Inequalities, R 793
- inequality, of records, R 260
- inequality test, R 47
- InertiaSubgroup, R 774
- Infinity, *R 157*
- infinity, R 157
- inflated class functions, R 775
- Info, R 79
- InfoAlgebra, R 610
- InfoAttributes, R 122
- InfoBckt, R 422
- InfoCharacterTable, R 726
- InfoCoh, R 377
- InfoComplement, R 358
- InfoCoset, R 355
- InfoFpGroup, R 459
- Info Functions, *R 79*
- InfoGroebner, R 682
- InfoGroup, R 346
- InfoLattice, R 372
- InfoLevel, R 79
- InfoMatrix, R 218
- InfoMonomial, R 818
- InfoNumtheor, R 135
- InfoOptions, R 88
- InfoPcSubgroup, R 375
- Information about a function, *R 61*
- Information about the version used, *R 83*
- InfoText, R 734
- InfoTom, R 703
- InfoWarning, R 80
- init.g, for a GAP package, E 38
- InitFusion, R 815
- InitPowerMap, R 813
- Injection, N 18
- InjectionZeroMagma, R 317
- InnerAutomorphism, R 386
- InnerAutomorphismNC, R 386
- InnerAutomorphismsAutomorphismGroup, R 387
- inner product, of group characters, R 772
- In Parent Attributes, *E 47*
- InParentFOA, E 48
- Input-Output Streams, *R 104*
- InputLogTo, R 94
 - for streams, R 101
 - stop logging input, R 94
- InputOutputLocalProcess, R 104
- InputTextFile, R 102
- InputTextNone, R 105
- InputTextString, R 103
- InputTextUser, R 103
- InsertTrivialStabilizer, R 421
- InstallAtExit, R 73
- installation, R 825
- Installation of GAP for MacOS, *R 836*
- Installation of GAP Package Binaries, *E 38*
- Installation Overview, *R 825*
- InstallCharReadHookFunc, R 105
- InstalledPackageVersion, R 842

- InstallFactorMaintenance, R 294
- InstallFlushableValue, P 32
- InstallGlobalFunction, P 32
- InstallHandlingByNiceBasis, R 608
- InstallImmediateMethod, P 14
- Installing a GAP Package, *R 840*
- Installing a Help Book, *E 42*
- InstallIsomorphismMaintenance, R 294
- InstallMethod, P 11
- InstallOtherMethod, P 12
- InstallSubsetMaintenance, R 294
- InstallTrueMethod, P 14
- InstallValue, P 32
- Int, R 126
 - for cyclotomics, R 155
 - for strings, R 253
- INT_CHAR, R 253
- integer part of a quotient, R 128
- Integers, R 125
- Integral Bases of Abelian Number Fields, *R 590*
- IntegralizedMat, R 241
- IntegratedStraightLineProgram, R 337
- IntermediateGroup, R 367
- IntermediateResultOfSLP, R 338
- IntermediateResultOfSLPWithoutOverwrite, R 338
- IntermediateResultsOfSLPWithoutOverwrite, R 338
- IntermediateSubgroups, R 367
- Internally Represented Cyclotomics, *R 163*
- Internally Represented Strings, *R 248*
- InterpolatedPolynomial, R 568
- IntersectBlist, R 208
- Intersection, R 270
 - for groups with pcgs, R 446
- intersection, of collections, R 270
 - of sets, R 193
- Intersection2, R 270
- IntersectionBlist, R 207
- IntersectionsTom, R 710
- IntersectSet, R 193
- IntFFE, R 582
- IntFFESymm, R 582
- IntHexString, R 253
- Introducing new Viewer for the Online Help, *E 45*
- IntScalarProducts, R 810
- IntVecFFE, R 582
- InvariantBilinearForm, R 427
- InvariantElementaryAbelianSeries, R 366
- Invariant Forms, *R 427*
- InvariantLattice, R 429
- InvariantQuadraticForm, R 427
- InvariantSesquilinearForm, R 427
- InvariantSubgroupsElementaryAbelianGroup, R 373
- Inverse, R 290
- inverse, group homomorphism, R 382
 - matrix, R 220
 - of class function, R 767
- InverseAttr, R 290
- InverseClasses, R 734
- InverseGeneralMapping, R 300
- InverseImmutable, R 290
- InverseMap, R 806
- InverseMatMod, R 234
- InverseMutable, R 290
- InverseOp, R 290
- InverseRepresentative, R 420
- InverseSameMutability, R 290
- InverseSM, R 290
- Invoking the Help, *R 22*
- Irr, R 729
- irrationalities, R 154
- IrrBaumClausen, R 746
- IrrConlon, R 746
- IrrDixonSchneider, R 746
- Irreducibility Tests, *R 693*
- irreducible character, R 771
- irreducible characters, computation, R 749
- IrreducibleDifferences, R 778
- Irreducible Maximal Finite Integral Matrix Groups, *R 526*
- IrreducibleModules, R 748
 - for groups with pcgs, R 446
- IrreducibleRepresentations, R 747
- IrreducibleRepresentationsDixon, R 748
- IrreducibleSolvableGroup, R 525
- IrreducibleSolvableGroupMS, R 525
- Irreducible Solvable Matrix Groups, *R 525*
- Is16BitsFamily, R 333
- Is32BitsFamily, R 333
- Is8BitsFamily, R 333
- IsAbelian, R 319
 - for character tables, R 731
- IsAbelianNumberField, R 589
- IsAbelianNumberFieldPolynomialRing, R 677

- IsAbelianTom, R 707
- IsAdditiveElement, R 295
- IsAdditiveElementWithInverse, R 295
- IsAdditiveElementWithZero, R 295
- IsAdditiveGroup, R 554
- IsAdditiveGroupGeneralMapping, R 307
- IsAdditiveGroupHomomorphism, R 307
- IsAdditivelyCommutative, R 555
- IsAdditivelyCommutativeElement, R 297
- IsAdditivelyCommutativeElementCollColl, R 297
- IsAdditivelyCommutativeElementCollection, R 297
- IsAdditivelyCommutativeElementFamily, R 297
- IsAdditiveMagma, R 553
- IsAdditiveMagmaWithInverses, R 554
- IsAdditiveMagmaWithZero, R 553
- IsAlgebra, R 617
- IsAlgebraGeneralMapping, R 308
- IsAlgebraHomomorphism, R 308
- IsAlgebraicElement, R 688
- IsAlgebraicExtension, R 687
- IsAlgebraModuleElement, R 629
- IsAlgebraModuleElementCollection, R 629
- IsAlgebraModuleElementFamily, R 629
- IsAlgebraWithOne, R 617
- IsAlgebraWithOneGeneralMapping, R 308
- IsAlgebraWithOneHomomorphism, R 308
- IsAlphaChar, R 249
- IsAlternatingGroup, R 413
- IsAnticommutative, R 563
- IsAntisymmetricBinaryRelation, R 311
- IsAssociated, R 564
- IsAssociative, R 319
- IsAssociativeElement, R 297
- IsAssociativeElementCollColl, R 297
- IsAssociativeElementCollection, R 297
- IsAssocWord, R 326
- IsAssocWordWithInverse, R 326
- IsAssocWordWithOne, R 326
- IsAttributeStoringRep, P 37
- IsAutomorphismGroup, R 387
- IsBasicWreathLessThanOrEqual, R 329
- IsBasicWreathProductOrdering, R 281
- IsBasis, R 597
- IsBasisByNiceBasis, R 608
- IsBasisOfAlgebraModuleElementSpace, R 630
- IsBergerCondition, R 819
- IsBijection, T 79
- IsBijective, R 302
- IsBinaryRelation, R 310
 - same as IsEndoGeneralMapping, R 310
- IsBLetterAssocWordRep, R 333
- IsBLetterWordsFamily, R 333
- IsBlist, R 206
- IsBlockMatrixRep, R 235
- IsBool, R 166
- IsBound, for lists, R 175
- IsBound and Unbind for Lists, *R 175*
- IsBound and Unbind for Records, *R 261*
- IsBOundElmWPObj, E 52
- IsBoundGlobal, R 45
- IsBrauerTable, R 725
- IsBravaisGroup, R 429
- IsBuiltFromAdditiveMagmaWithInverses, R 342
- IsBuiltFromGroup, R 342
- IsBuiltFromMagma, R 342
- IsBuiltFromMagmaWithInverses, R 342
- IsBuiltFromMagmaWithOne, R 342
- IsBuiltFromSemigroup, R 342
- IsCanonicalBasis, R 600
- IsCanonicalBasisFullMatrixModule, R 604
- IsCanonicalBasisFullRowModule, R 604
- IsCanonicalNiceMonomorphism, R 385
- IsCanonicalPcgs, R 437
- IsCentral, R 319
- IsChainTypeGroup, N 19
- IsChar, R 245
- IsCharacter, R 771
- IsCharacteristicSubgroup, R 348
- IsCharacterTable, R 725
- IsCharacterTableInProgress, R 725
- IsCharCollection, R 245
- IsCheapConwayPolynomial, R 585
- IsClassFunction, R 762
- IsClassFusionOfNormalSubgroup, R 740
- IsClosedStream, R 96
- IsCochain, R 651
- IsCochainCollection, R 651
- IsCollection, R 263
- IsCollectionFamily, R 263
- IsCommutative, R 319
- IsCommutativeElement, R 297
- IsCommutativeElementCollColl, R 297
- IsCommutativeElementCollection, R 297
- IsComponentObjectRep, P 38

- IsCompositionMappingRep, R 300
- IsConfluent, R 340
 - for pc groups, R 451
- IsConjugacyClassSubgroupsByStabilizerRep, R 369
- IsConjugacyClassSubgroupsRep, R 369
- IsConjugate, R 357
- IsConjugatorAutomorphism, R 386
- IsConjugatorIsomorphism, R 386
- IsConstantRationalFunction, R 669
- IsConstantTimeAccessGeneralMapping, R 308
- IsConstantTimeAccessList, R 170
- IsContainedInSpan, R 602
- IsCopyable, R 112
- IsCyc, R 155
- IsCyclic, R 362
 - for character tables, R 731
- IsCyclicTom, R 707
- IsCyclotomic, R 155
- IsCyclotomicField, R 589
- IsCyclotomicMatrixGroup, R 428
- IsDenseList, R 169
- IsDiagonalMat, R 222
- IsDictionary, N 9
- IsDigitChar, R 249
- IsDirectoryPath, R 92
- IsDistributive, R 563
- IsDivisionRing, R 573
- IsDomain, R 287
- IsDoneIterator, R 274
- IsDoubleCoset, R 355
- IsDuplicateFree, R 190
- IsDuplicateFreeList, R 190
- IsDxLargeGroup, R 750
- IsElementaryAbelian, R 362
 - for character tables, R 731
- IsElementOfFpMonoid, R 545
- IsElementOfFpSemigroup, R 545
- IsElementOfFreeMagmaRing, R 660
- IsElementOfFreeMagmaRingCollection, R 660
- IsElementOfFreeMagmaRingFamily, R 660
- IsElementOfMagmaRingModuloRelations, R 661
- IsElementOfMagmaRingModuloRelations-Collection, R 661
- IsElementOfMagmaRingModuloRelationsFamily, R 661
- IsElementOfMagmaRingModuloSpanOfZeroFamily, R 662
- IsEmpty, R 268
- IsEmptyString, R 248
- IsEndOfStream, R 99
- IsEndoGeneralMapping, R 308
 - same as IsBinaryRelation, R 310
- IsEqualSet, R 192
- IsEquivalenceClass, R 314
- IsEquivalenceRelation, R 311
- IsEuclideanRing, R 565
- IsEvenInt, R 126
- IsExecutableFile, R 92
- IsExistingFile, R 92
- IsExtAEElement, R 295
- IsExternalOrbit, R 405
- IsExternalSet, R 404
- IsExternalSubset, R 405
- IsExtLElement, R 295
- IsExtRElement, R 295
- IsFamilyPcgs, R 449
- IsFFE, R 579
- IsFFECollColl, R 579
- IsFFECollection, R 579
- IsField, R 573
- IsFieldControlledByGaloisGroup, R 576
- IsFieldHomomorphism, R 308
- IsFinite, R 268
 - for character tables, R 731
- IsFiniteDimensional, R 571
 - for matrix algebras, R 618
- IsFiniteFieldPolynomialRing, R 677
- IsFinitelyGeneratedGroup, R 363
- IsFiniteOrderElement, R 297
- IsFiniteOrderElementCollColl, R 297
- IsFiniteOrderElementCollection, R 297
- IsFiniteOrdersPcgs, R 433
- IsFixedStabilizer, R 422
- IsFLMLOR, R 617
- IsFLMLORWithOne, R 617
- IsFpGroup, R 459
- IsFpMonoid, R 545
- IsFpSemigroup, R 545
- IsFreeGroup, R 327
- IsFreeLeftModule, R 571
- IsFreeMagmaRing, R 659
- IsFreeMagmaRingWithOne, R 659
- IsFromFpGroupGeneralMappingByImages, R 391
- IsFromFpGroupHomomorphismByImages, R 391

- IsFromFpGroupStdGensGeneralMappingByImages, R 391
- IsFromFpGroupStdGensHomomorphismByImages, R 391
- IsFullHomModule, R 607
- IsFullMatrixModule, R 572
- IsFullRowModule, R 572
- IsFullSubgroupGLorSLRespectingBilinearForm, R 427
- IsFullSubgroupGLorSLRespectingQuadratic-Form, R 428
- IsFullSubgroupGLorSLRespectingSesquilinear-Form, R 427
- IsFullTransformationSemigroup, R 536
- IsFunc, T 79
- IsFunction, R 63
- IsGaussianIntegers, R 593
- IsGaussianRationals, R 588
- IsGaussianSpace, R 602
- IsGaussInt, R 157
- IsGaussRat, R 157
- IsGeneralizedDomain, R 287
- IsGeneralizedRowVector, R 181
- IsGeneralLinearGroup, R 426
- IsGeneralMapping, R 308
- IsGeneralMappingFamily, R 309
- IsGeneratorsOfStruct, R 284
- IsGL, R 426
- IsGreensClass, R 538
- IsGreensDClass, R 538
- IsGreensDRelation, R 538
- IsGreensHClass, R 538
- IsGreensHRelation, R 538
- IsGreensJClass, R 538
- IsGreensJRelation, R 538
- IsGreensLClass, R 538
- IsGreensLessThanOrEqual, R 538
- IsGreensLRelation, R 538
- IsGreensRClass, R 538
- IsGreensRelation, R 538
- IsGreensRRelation, R 538
- IsGroup, R 346
- IsGroupGeneralMapping, R 306
- IsGroupGeneralMappingByAsGroupGeneral-MappingByImages, R 391
- IsGroupGeneralMappingByImages, R 391
- IsGroupGeneralMappingByPcgs, R 391
- IsGroupHClass, R 539
- IsGroupHomomorphism, R 306
- IsGroupOfAutomorphisms, R 387
- IsGroupRing, R 659
- IsHandledByNiceBasis, R 572
 - for vector spaces, R 608
- IsHandledByNiceMonomorphism, R 385
- IsHash, N 10
- IsHasseDiagram, R 311
- IsHomCoset, N 13
- IsHomCosetOfAdditiveElt, N 14
- IsHomCosetOfFp, N 14
- IsHomCosetOfMatrix, N 14
- IsHomCosetOfPerm, N 14
- IsHomCosetOfTuple, N 14
- IsHomCosetToAdditiveElt, N 13
- IsHomCosetToAdditiveEltRep, N 13
- IsHomCosetToFp, N 13
- IsHomCosetToFpRep, N 13
- IsHomCosetToMatrix, N 13
- IsHomCosetToMatrixRep, N 13
- IsHomCosetToObjectRep, N 13
- IsHomCosetToPerm, N 13
- IsHomCosetToPermRep, N 13
- IsHomCosetToTuple, N 13
- IsHomCosetToTupleRep, N 13
- IsHomogeneousList, R 170
- IsIdempotent, R 290
- IsIdenticalObj, R 110, T 24
- IsInChain, N 19
- IsIncomparableUnder, R 277
- IsInducedFromNormalSubgroup, R 821
- IsInducedPcgs, R 436
- IsInducedPcgsWrtSpecialPcgs, R 444
- IsInfBitsFamily, R 333
- IsInfinity, R 157
- IsInjective, R 302
- IsInnerAutomorphism, R 386
- IsInputOutputStream, R 104
- IsInputStream, R 96
- IsInputTextNone, R 96
- IsInputTextStream, R 96
- IsInt, R 126
- IsIntegerMatrixGroup, R 429
- IsIntegers, R 125
- IsIntegralBasis, R 600
- IsIntegralCyclotomic, R 155
- IsIntegralRing, R 562
- IsInternallyConsistent, R 114

- for character tables, R 740
- for tables of marks, R 708
- IsIrreducibleCharacter, R 771
- IsIrreducibleRingElement, R 564
- IsIterator, R 274
- IsJacobianElement, R 297
- IsJacobianElementCollColl, R 297
- IsJacobianElementCollection, R 297
- IsJacobianRing, R 563
- IsLaurentPolynomial, R 668
- IsLaurentPolynomialDefaultRep, R 684
- IsLDistributive, R 563
- IsLeftAlgebraModuleElement, R 629
- IsLeftAlgebraModuleElementCollection, R 629
- IsLeftIdeal, R 560
- IsLeftIdealInParent, R 560
- IsLeftModule, R 569
- IsLeftModuleGeneralMapping, R 307
- IsLeftModuleHomomorphism, R 307
- IsLeftOperatorAdditiveGroup, R 569
- IsLeftSemigroupIdeal, R 536
- IsLeftVectorSpace, R 594
- IsLessThanOrEqualUnder, R 277
- IsLessThanUnder, R 277
- IsLetterAssocWordRep, R 332
- IsLetterWordsFamily, R 332
- IsLexicographicallyLess, R 196
- IsLexOrderedFFE, R 580
- IsLieAbelian, R 640
- IsLieAlgebra, R 617
- IsLieMatrix, R 219
- IsLieNilpotent, R 640
- IsLieObject, R 635
- IsLieObjectCollection, R 635
- IsLieSolvable, R 640
- IsLinearMapping, R 307
- IsLinearMappingsModule, R 607
- IsList, R 169
- IsListDefault, R 181
- IsListOrCollection, R 264
- IsLogOrderedFFE, R 580
- IsLookupDictionary, N 9
- IsLowerAlphaChar, R 249
- IsLowerTriangularMat, R 222
- IsMagma, R 315
- IsMagmaHomomorphism, R 305
- IsMagmaRingModuloRelations, R 661
- IsMagmaRingModuloSpanOfZero, R 662
- IsMagmaWithInverses, R 315
- IsMagmaWithInversesIfNonzero, R 315
- IsMagmaWithOne, R 315
- IsMapping, R 301
- IsMat, T 79
- IsMatchingSublist, R 189
- IsMatrix, R 218
- IsMatrixGroup, R 425
- IsMatrixModule, R 572
- IsMatrixSpace, R 602
- IsMinimalNonmonomial, R 824
- IsModuloPcgs, R 438
- IsMonoid, R 541
- IsMonomial, for characters, R 821
 - for character tables, R 731
 - for groups, R 821
 - for positive integers, R 822
- IsMonomialGroup, R 362
- IsMonomialMatrix, R 222
- IsMonomialNumber, R 822
- IsMonomialOrdering, R 678
- IsMultiplicativeElement, R 295
- IsMultiplicativeElementWithInverse, R 296
- IsMultiplicativeElementWithOne, R 296
- IsMultiplicativeElementWithZero, R 296
- IsMultiplicativeGeneralizedRowVector, R 181
- IsMultiplicativeZero, R 319
- IsMutable, R 112
- IsMutableBasis, R 601
- IsNaturalAlternatingGroup, R 412
- IsNaturalGL, R 427
- IsNaturalGLnZ, R 429
- IsNaturalSL, R 427
- IsNaturalSLnZ, R 429
- IsNaturalSymmetricGroup, R 412
- IsNearAdditiveElement, R 295
- IsNearAdditiveElementWithInverse, R 295
- IsNearAdditiveElementWithZero, R 295
- IsNearAdditiveGroup, R 553
- IsNearAdditiveMagma, R 553
- IsNearAdditiveMagmaWithInverses, R 553
- IsNearAdditiveMagmaWithZero, R 553
- IsNearlyCharacterTable, R 725
- IsNearRingElement, R 296
- IsNearRingElementWithInverse, R 296
- IsNearRingElementWithOne, R 296
- IsNegRat, R 143
- IsNilpotent, for character tables, R 731

- for groups with pcgs, R 446
- IsNilpotentElement, R 647
- IsNilpotentGroup, R 362
- IsNilpotentTom, R 707
- IsNonassocWord, R 322
- IsNonassocWordCollection, R 322
- IsNonassocWordWithOne, R 322
- IsNonassocWordWithOneCollection, R 322
- IsNonnegativeIntegers, R 125
- IsNonSPGeneralMapping, R 309
- IsNonTrivial, R 268
- IsNormal, R 347
- IsNormalBasis, R 600
- IsNotIdenticalObj, R 111
- IsNumberField, R 589
- IsObject, R 109
- IsOddInt, R 126
- isomorphic, pc group, R 452
- IsomorphicSubgroups, R 389
- IsomorphismFpAlgebra, R 626
- IsomorphismFpGroup, R 468
 - for subgroups of fp groups, R 470
- IsomorphismFpGroupByGenerators, R 468
- IsomorphismFpGroupByGeneratorsNC, R 468
- IsomorphismFpGroupByPcgs, R 450
- IsomorphismFpSemigroup, R 546
- IsomorphismGroups, R 389
- IsomorphismMatrixAlgebra, R 626
- IsomorphismPcGroup, R 453
- IsomorphismPermGroup, R 412
 - for Imf matrix groups, R 532
- IsomorphismPermGroupImfGroup, R 533
- IsomorphismReesMatrixSemigroup, R 540
- IsomorphismRefinedPcGroup, R 452
- IsomorphismRepStruct, R 285
- isomorphisms, find all, R 389
- IsomorphismSCAlgebra, R 627
- IsomorphismSimplifiedFpGroup, R 471
- IsomorphismSpecialPcGroup, R 453
- Isomorphisms vs. Isomorphic Structures, *T* 84
- IsomorphismTransformationSemigroup, R 536
- IsomorphismTypeInfoFiniteSimpleGroup, R 363
- IsOne, R 290
- IsOperation, R 63
- IsOrdering, R 276
- IsOrderingOnFamilyOfAssocWords, R 278
- IsOrdinaryMatrix, R 218
- IsOrdinaryTable, R 725
- IsOutputStream, R 97
- IsOutputTextNone, R 97
- IsOutputTextStream, R 97
- IsPadicExtensionNumber, R 691
- IsPadicExtensionNumberFamily, R 691
- IsParentPcgsFamilyPcgs, R 449
- IsPartialOrderBinaryRelation, R 311
- IsPcGroup, R 450
- IsPcGroupGeneralMappingByImages, R 391
- IsPcGroupHomomorphismByImages, R 391
- IsPcgs, R 432
- IsPcgsCentralSeries, R 440
- IsPcgsChiefSeries, R 441
- IsPcgsElementaryAbelianSeries, R 440
- IsPcgsPCentralSeriesPGroup, R 441
- IsPerfect, for character tables, R 731
- IsPerfectGroup, R 362
- IsPerfectTom, R 707
- IsPerm, R 407
- IsPermCollColl, R 407
- IsPermCollection, R 407
- IsPermGroup, R 411
- IsPermGroupGeneralMappingByImages, R 391
- IsPermGroupHomomorphismByImages, R 391
- IsPGroup, R 363
- IsPNilpotent, R 364
- IsPolycyclicGroup, R 362
- IsPolynomial, R 668
- IsPolynomialDefaultRep, R 684
- IsPolynomialFunction, R 667
- IsPolynomialFunctionsFamily, R 682
- IsPolynomialRing, R 677
- IsPosInt, R 126
- IsPositiveIntegers, R 125
- IsPosRat, R 143
- IsPreimagesByAsGroupGeneralMappingByImages, R 391
- IsPreOrderBinaryRelation, R 311
- IsPrime, R 564
- IsPrimeField, R 575
- IsPrimeInt, R 130
- IsPrimeOrdersPcgs, R 433
- IsPrimePowerInt, R 131
- IsPrimitive, R 403
- IsPrimitiveCharacter, R 820
- IsPrimitivePolynomial, R 669
- IsPrimitiveRootMod, R 137
- IsProbablyPrimeInt, R 130

- IsPseudoCanonicalBasisFullHomModule, R 607
- IsPSolvable, R 364
- IsPSolvableCharacterTable, R 740
- IsPSolvableCharacterTableOp, R 740
- IsPurePadicNumber, R 690
- IsPurePadicNumberFamily, R 690
- IsQuasiPrimitive, R 820
- IsQuaternion, R 618
- IsQuaternionCollColl, R 618
- IsQuaternionCollection, R 618
- IsQuickPositionList, R 204
- IsQuotientSemigroup, R 537
- IsRange, R 203
- IsRat, R 142
- IsRationalFunction, R 667
- IsRationalFunctionDefaultRep, R 684
- IsRationalFunctionsFamily, R 682
- IsRationalMatrixGroup, R 428
- IsRationals, R 142
- IsRationalsPolynomialRing, R 677
- IsRDistributive, R 563
- IsReadableFile, R 92
- IsReadOnlyGlobal, R 44
- IsRec, T 79
- IsRecord, R 257
- IsRecordCollColl, R 257
- IsRecordCollection, R 257
- IsReduced, R 341
- IsReductionOrdering, R 278
- IsReesCongruence, R 537
- IsReesCongruenceSemigroup, R 536
- IsReesMatrixSemigroup, R 539
- IsReesMatrixSemigroupElement, R 540
- IsReesZeroMatrixSemigroup, R 539
- IsReesZeroMatrixSemigroupElement, R 540
- IsReflexiveBinaryRelation, R 310
- IsRegular, R 402
- IsRegularDCClass, R 539
- IsRegularSemigroup, R 535
- IsRegularSemigroupElement, R 535
- IsRelativelySM, R 823
- IsRestrictedLieAlgebra, R 645
- IsRewritingSystem, R 340
- IsRightAlgebraModuleElement, R 629
- IsRightAlgebraModuleElementCollection, R 629
- IsRightCoset, R 353
- IsRightIdeal, R 560
- IsRightIdealInParent, R 560
- IsRightModule, R 570
- IsRightOperatorAdditiveGroup, R 569
- IsRightSemigroupIdeal, R 536
- IsRing, R 557
- IsRingElement, R 296
- IsRingElementWithInverse, R 296
- IsRingElementWithOne, R 296
- IsRingGeneralMapping, R 308
- IsRingHomomorphism, R 308
- IsRingWithOne, R 561
- IsRingWithOneGeneralMapping, R 308
- IsRingWithOneHomomorphism, R 308
- IsRootSystem, R 642
- IsRootSystemFromLieAlgebra, R 642
- IsRowModule, R 572
- IsRowSpace, R 602
- IsRowVector, R 210
- IsScalar, R 296
- IsSemiEchelonized, R 603
- IsSemigroup, R 534
- IsSemigroupCongruence, R 537
- IsSemigroupIdeal, R 536
- IsSemiRegular, R 402
- IsSet, R 190, T 79
- IsShortLexLessThanOrEqual, R 329
- IsShortLexOrdering, R 279
- IsSimple, for character tables, R 731
- IsSimpleAlgebra, R 618
- IsSimpleGroup, R 362
- IsSimpleSemigroup, R 535
- IsSingleValued, R 301
- IsSL, R 427
- IsSolvable, for character tables, R 731
- IsSolvableGroup, R 362
- IsSolvableTom, R 707
- IsSortedList, R 190
- IsSpecialLinearGroup, R 427
- IsSpecialPcgs, R 443
- IsSPGeneralMapping, R 309
- IsSporadicSimple, for character tables, R 731
- IsSSortedList, R 190
- IsStandardGeneratorsOfGroup, R 713
- IsStraightLineProgElm, R 338
- IsStraightLineProgram, R 334
- IsStream, R 96
- IsString, R 245
- IsStringRep, R 248
- IsStruct, R 285

- IsSubgroup, R 347
- IsSubgroupFpGroup, R 459
- IsSubgroupOfWholeGroupByQuotientRep, R 472
- IsSubgroupSL, R 427
- IsSubmonoidFpMonoid, R 544
- IsSubnormal, R 348
- IsSubnormallyMonomial, R 823
- IsSubsemigroupFpSemigroup, R 544
- IsSubset, R 270
- IsSubsetBlist, R 207
- IsSubsetLocallyFiniteGroup, R 363
- IsSubsetSet, R 193
- IsSubspacesVectorSpace, R 596
- IsSubstruct, R 287
- IsSupersolvable, for character tables, R 731
 - for groups with pcgs, R 446
- IsSupersolvableGroup, R 362
- IsSurjective, R 302
- IsSyllableAssocWordRep, R 333
- IsSyllableWordsFamily, R 333
- IsSymmetricBinaryRelation, R 311
- IsSymmetricGroup, R 413
- IsTable, R 170
- IsTableOfMarks, R 703
- IsTableOfMarksWithGens, R 714
- IsToPcGroupGeneralMappingByImages, R 391
- IsToPcGroupHomomorphismByImages, R 391
- IsToPermGroupGeneralMappingByImages, R 391
- IsToPermGroupHomomorphismByImages, R 391
- IsTotal, R 301
- IsTotalOrdering, R 277
- IsTransformation, R 550
- IsTransformationCollection, R 550
- IsTransformationMonoid, R 536
- IsTransformationSemigroup, R 536
- IsTransitive, for characters, R 774
 - for class functions, R 774
 - for group actions, R 402
- IsTransitiveBinaryRelation, R 311
- IsTranslationInvariantOrdering, R 278
- IsTrivial, R 268
- IsTuple, R 299
- IsTwoSidedIdeal, R 560
- IsTwoSidedIdealInParent, R 560
- IsUEALatticeElement, R 654
- IsUEALatticeElementCollection, R 654
- IsUEALatticeElementFamily, R 654
- IsUniqueFactorizationRing, R 562
- IsUnit, R 563
- IsUnivariatePolynomial, R 668
- IsUnivariatePolynomialRing, R 678
- IsUnivariateRationalFunction, R 668
- IsUnknown, R 164
- IsUpperAlphaChar, R 249
- IsUpperTriangularMat, R 222
- IsValidIdentifier, R 42
- IsVector, R 296
- IsVectorSpace, R 594
- IsVirtualCharacter, R 771
- IsWeightLexOrdering, R 280
- IsWeightRepElement, R 655
- IsWeightRepElementCollection, R 655
- IsWeightRepElementFamily, R 655
- IsWellFoundedOrdering, R 277
- IsWeylGroup, R 643
- IsWholeFamily, R 269
- IsWLetterAssocWordRep, R 333
- IsWLetterWordsFamily, R 333
- IsWord, R 321
- IsWordCollection, R 322
- IsWordWithInverse, R 321
- IsWordWithOne, R 321
- IsWreathProductOrdering, R 281
- IsWritableFile, R 92
- IsZero, R 290
- IsZeroGroup, R 536
- IsZeroSimpleSemigroup, R 535
- IsZeroSquaredElement, R 298
- IsZeroSquaredElementCollColl, R 298
- IsZeroSquaredElementCollection, R 298
- IsZeroSquaredRing, R 563
- IsZmodnZObj, R 134
- IsZmodnZObjNonprime, R 134
- IsZmodpZObj, R 134
- IsZmodpZObjLarge, R 134
- IsZmodpZObjSmall, R 134
- Iterated, R 201
- Iterator, R 273
- iterator, for low index subgroups, R 467
- IteratorByBasis, R 599
- IteratorByFunctions, R 275
- IteratorList, R 275
- Iterators, *R 273*
- IteratorSorted, R 274

J

- j_N , R 159
- Jacobi, R 137
- JenningsLieAlgebra, R 646
- JenningsSeries, R 367
- JoinEquivalenceRelations, R 313
- JoinStringsWithSeparator, R 251
- JordanDecomposition, R 231
- K**
- k_N , R 159
- KappaPerp, R 647
- KB_REW, R 548
- kernel, T 55
- KernelOfAdditiveGeneralMapping, R 307
- KernelOfCharacter, R 773
- KernelOfMultiplicativeGeneralMapping, R 306
- KernelOfTransformation, R 551
- KeyDependentOperation, E 46
- Key Dependent Operations, E 46
- Keywords, R 41
- KillingMatrix, R 647
- KnownAttributesOfObject, R 120, T 75
- Known Problems of the Configure Process, R 832
- KnownPropertiesOfObject, R 123, T 75
- KnownTruePropertiesOfObject, R 123, T 75
- KnowsDictionary, N 9
- KnowsHowToDecompose, R 379
- KnuthBendixRewritingSystem, R 549
- Krasner-Kaloujnine theorem, R 504
- KroneckerProduct, R 224
- KuKGenerators, R 504
- L**
- l_N , R 159
- Labels and References, E 15
- Lambda, R 135
- Language Overview, R 39
- larger or equal, R 47
- larger test, R 47
- LargestElementGroup, R 375
- LargestElementStabChain, R 420
- LargestMovedPoint, R 408
- LargestUnknown, R 164
- last, R 64, T 24
- last2, T 24
- last3, T 24
- LastSystemError, R 89
- LaTeXStringDecompositionMatrix, R 738
- lattice base reduction, R 241
- lattice basis reduction, for virtual characters, R 778
- LatticeByCyclicExtension, R 372
- LatticeGeneratorsInUEA, R 654
- Lattice Reduction, R 241
- LatticeSubgroups, R 370
- LatticeSubgroupsByTom, R 701
- LaurentPolynomialByCoefficients, R 675
- LaurentPolynomialByExtRep, R 685
- LaurentPolynomialByExtRepNC, R 685
- Laurent Polynomials, R 675
- LClassOfHClass, R 538
- Lcm, R 567
- LcmInt, R 129
- LcmOp, R 567
- LeadCoeffsIGS, R 437
- LeadingCoefficient, R 670
- LeadingCoefficientOfPolynomial, R 679
- LeadingExponentOfPcElement, R 434
- LeadingMonomial, R 671
- LeadingMonomialOfPolynomial, R 678
- LeadingTermOfPolynomial, R 678
- Leaving GAP, R 73
- leaving GAP, T 18
- LeftActingAlgebra, R 630
- LeftActingDomain, R 570
- LeftActingRingOfIdeal, R 561
- LeftAlgebraModule, R 628
- LeftAlgebraModuleByGenerators, R 628
- left cosets, R 353
- LeftDerivations, R 637
- LeftIdeal, R 559
- LeftIdealByGenerators, R 560
- LeftIdealNC, R 560
- LeftModuleByGenerators, R 570
- LeftModuleByHomomorphismToMatAlg, R 631
- LeftModuleGeneralMappingByImages, R 605
- LeftModuleHomomorphismByImages, R 605
- LeftModuleHomomorphismByImagesNC, R 605
- LeftModuleHomomorphismByMatrix, R 606
- LeftQuotient, R 292
 - for words, R 330
- LeftShiftRowVector, R 214
- legacy, R 844
- Legendre, R 138
- Length, R 190
 - of an associative word, R 330
- length, of a word, R 330
- LengthsTom, R 704

- LengthWord, T 79
- LengthWPObj, E 52
- LenstraBase, R 591
- LessThanFunction, R 277
- LessThanOrEqualFunction, R 277
- LetterRepAssocWord, R 333
- LevelsOfGenerators, R 281
- LeviMalcevDecomposition, R 623
 - for Lie algebras, R 641
- Lexical Structure, R 40
- LexicographicOrdering, R 278
- LGFirst, R 444
- LGLayers, R 444
- LGLength, R 444
- LGWeights, R 443
- library tables, R 722
- LieAlgebra, R 636
- LieAlgebraByStructureConstants, R 636
- LieBracket, R 292
- LieCenter, R 638
- LieCentralizer, R 638
- LieCentre, R 638
- LieCoboundaryOperator, R 651
- LieDerivedSeries, R 639
- LieDerivedSubalgebra, R 639
- LieFamily, R 636
- LieLowerCentralSeries, R 640
- LieNilRadical, R 639
- LieNormalizer, R 638
- LieObject, R 635
- Lie objects, R 635
- LieSolvableRadical, R 639
- LieUpperCentralSeries, R 640
- LiftedInducedPcgs, R 439
- LiftedPcElement, R 439
- LinearAction, R 445
- LinearActionLayer, R 445
- LinearCharacters, R 730
- LinearCombination, R 599
- LinearCombinationPcgs, R 434
- Linear equations over the integers and Integral Matrices, R 236
- LinearIndependentColumns, R 241
- Linear Mappings, R 307
- LinearOperation, R 445
- LinearOperationLayer, R 445
- Line Editing, R 73
- line editing, T 20
- LinesOfStraightLineProgram, R 335
- List, R 198
- list and non-list, difference, R 183
 - left quotient, R 185
 - mod, R 185
 - product, R 184
 - quotient, R 185
- List Assignment, R 173
- list assignment, operation, R 171
- ListBlist, R 207
- list boundedness test, operation, R 171
- List Categories, R 169
- list element, access, R 171
 - assignment, R 173
 - operation, R 171
- List Elements, R 171
- list environment, compact description, E 21
 - description, E 20
 - ordered, E 21
 - unordered, E 21
- list equal, comparison, R 179
- ListN, R 201
- list of available books, R 23
- List Operations, T 35
- ListPerm, R 410
- lists, dense, T 29
 - strictly sorted, T 31
- lists, identical, T 29
 - plain, T 27
- Lists and Collections, R 264
- list smaller, comparison, R 180
- ListStabChain, R 420
- list unbind, operation, R 171
- ListWithIdenticalEntries, R 186
- ListX, R 201
- LLL, R 778
- LLL algorithm, for Gram matrices, R 242
 - for vectors, R 241
 - for virtual characters, R 778
- LLLReducedBasis, R 241
- LLLReducedGramMat, R 242
- LoadDynamicModule, R 35
- Loading a GAP Package, R 840
- loading a saved workspace, R 37
- loading source code from a file, T 19
- LoadPackage, R 840
- local, R 55
- Local Variables, T 41

- logarithm, discrete, R 137
 - of a root of unity, R 157
- LogFFE, R 581
- logical, R 166
- Logical Implications, *P 14*
- logical operations, R 167
- LogInt, R 127
- LogMod, R 136
- LogModShanks, R 136
- LogTo, R 94
 - for streams, R 101
 - stop logging, R 94
- LongestWeylWordPerm, R 644
- LookupDictionary, N 9
- loop, read eval print, R 64
- loop, for, R 53
 - repeat, R 52
 - while, R 52
- loop over iterator, R 54
- loop over object, R 54
- loop over range, R 53
- loops, leaving, R 55
 - restarting, R 55
- loops, for, *T 33*
 - while, *T 33*
- LowercaseString, R 250
- LowerCentralSeriesOfGroup, R 366
- Low Index Subgroups, *R 467*
- LowIndexSubgroupsFpGroup, R 467
- LowIndexSubgroupsFpGroupIterator, R 467
- Low Level Access Functions for Weak Pointer
 - Objects, *E 52*
- Low Level Routines to Modify and Create Stabilizer
 - Chains, *R 421*
- Lucas, R 152
- M**
 - m_N , R 159
 - Macintosh, R 835
 - MacOS, R 836
 - Magma, R 316
 - MagmaByGenerators, R 316
 - MagmaByMultiplicationTable, R 317
 - Magma Categories, *R 315*
 - MagmaElement, R 317
 - Magma Generation, *R 316*
 - MagmaHomomorphismByFunctionNC, R 305
 - Magma Homomorphisms, *R 305*
 - MagmaRingModuloSpanOfZero, R 662
 - Magma Rings modulo Relations, *R 661*
 - Magma Rings modulo the Span of a Zero Element, *R 662*
 - Magnas Defined by Multiplication Tables, *R 317*
 - MagmaWithInverses, R 316
 - MagmaWithInversesByGenerators, R 316
 - MagmaWithInversesByMultiplicationTable, R 317
 - MagmaWithOne, R 316
 - MagmaWithOneByGenerators, R 316
 - MagmaWithOneByMultiplicationTable, R 317
 - Main Loop, *R 64*
 - MakeConfluent, R 341
 - MakeHomChain, N 21
 - MakeImmutable, R 112
 - makeindex, E 26
 - MakeReadOnlyGlobal, R 44
 - MakeReadWriteGlobal, R 44
 - Making transformation semigroups, *R 536*
 - manual.bb1, E 26
 - manual.bib, E 26
 - manual.dvi, E 26
 - manual.lab, E 26
 - manual.mst, E 26
 - manual.six, E 26
 - manual.tex, E 26
 - Manual Conventions, *R 20*
 - manualindex, E 26
 - map, parametrized, R 805
 - MappedWord, R 323
 - MappingByFunction, R 300
 - MappingPermListList, R 410
 - Mappings that Respect Addition, *R 307*
 - Mappings that Respect Multiplication, *R 306*
 - Mappings which are Compatible with Algebraic Structures, *R 305*
 - maps, R 796
 - maps-to operator, T 25
 - MarksTom, R 704
 - MatAlgebra, R 614
 - MatClassMultCoeffsCharTable, R 742
 - mathematics alignments, E 23
 - mathematics displays, E 23
 - MathieuGroup, R 508
 - MatLieAlgebra, R 637
 - matrices, T 36
 - commutator, R 221

- Matrices as Basis of a Row Space, *R 229*
- Matrices as Linear Mappings, *R 230*
- Matrices over Finite Fields, *R 232*
- Matrices Representing Linear Equations and the Gaussian Algorithm, *R 225*
- MatrixAlgebra, *R 614*
- MatrixAutomorphisms, *R 758*
- matrix automorphisms, *R 799*
- MatrixByBlockMatrix, *R 235*
- Matrix Constructions, *R 223*
- Matrix Groups in Characteristic 0, *R 428*
- MatrixLieAlgebra, *R 637*
- MatrixOfAction, *R 630*
- matrix spaces, *R 602*
- MatScalarProducts, *R 772*
- MatTom, *R 706*
- MaximalAbelianQuotient, *R 368*
- MaximalBlocks, *R 403*
- MaximalNormalSubgroups, *R 370*
- MaximalSubgroupClassReps, *R 369*
- MaximalSubgroups, *R 369*
 - for groups with pcgs, *R 446*
- MaximalSubgroupsLattice, *R 371*
- MaximalSubgroupsTom, *R 710*
- Maximum, *R 196*
- MaximumList, *R 197*
- MeatAxe Modules, *R 692*
- MeetEquivalenceRelations, *R 313*
- MeetMaps, *R 808*
- MeetPartitionStrat, *E 59*
- meet strategy, *E 59*
- Membership Test for Collections, *R 272*
- Membership Test for Lists, *R 179*
- method, *P 11*
- Method Installation, *P 11*
- methods, *T 72*
 - immediate, *T 74*
 - selection, *T 73*
 - true, *T 74*
- MinimalElementCosetStabChain, *R 420*
- MinimalGeneratingSet, *R 375*
 - for groups with pcgs, *R 446*
- MinimalNonmonomialGroup, *R 824*
- Minimal Nonmonomial Groups, *R 824*
- MinimalNormalSubgroups, *R 370*
- MinimalPolynomial, *R 672*
 - over a field, *R 576*
 - over a ring, *R 672*
- Minimal Polynomials, *R 672*
- MinimalStabChain, *R 418*
- MinimalSupergroupsLattice, *R 371*
- MinimalSupergroupsTom, *R 711*
- MinimizedBombieriNorm, *R 674*
- Minimum, *R 196*
- MinimumList, *R 197*
- MinusCharacter, *R 814*
- Miscellaneous, *R 141*
- Miscellaneous Name Changes or Removed Names, *R 845*
- mod, integers, *R 134*
 - laurent polynomials, *R 666*
 - lists, *R 185*
 - rationals, *R 48*
- mod, *R 48*
 - arithmetic operators, *R 48*
 - for character tables, *R 729*
 - residue class rings, *R 133*
- modular inverse, *R 48*
- modular remainder, *R 48*
- modular roots, *R 139*
- ModuleByRestriction, *R 632*
- Module Constructions, *R 692*
- Module Homomorphisms, *R 695*
- ModuleOfExtension, *R 455*
- Modules over Lie Algebras and Their Cohomology, *R 650*
- Modules over Semisimple Lie Algebras, *R 652*
- modulo, *R 48*
 - arithmetic operators, *R 48*
 - for pcgs, *R 438*
 - residue class rings, *R 133*
- ModuloPcgs, *R 438*
- MoebiusMu, *R 140*
- MoebiusTom, *R 706*
- Molien Series, *R 785*
- MolienSeries, *R 785*
- MolienSeriesInfo, *R 786*
- MolienSeriesWithGivenDenominator, *R 787*
- Monoid, *R 541*
- MonoidByGenerators, *R 541*
- MonoidByMultiplicationTable, *R 542*
- MonoidOfRewritingSystem, *R 549*
- MonomialComparisonFunction, *R 679*
- MonomialExtGrlexLess, *R 681*
- MonomialExtrepComparisonFun, *R 679*
- MonomialGrevlexOrdering, *R 680*

MonomialGrlexOrdering, R 680
 MonomialLexOrdering, R 679
 Monomial Orderings, *R 678*
 MonomialTotalDegreeLess, R 845
 monomorphisms, find all, R 389
 MorClassLoop, R 389
 More about Boolean Lists, *R 209*
 More About Global Variables, *R 44*
 More about Tables of Marks, *R 698*
 MostFrequentGeneratorFpGroup, R 465
 MovedPoints, R 409
 Moved Points of Permutations, *R 408*
 MTX.BasesCompositionSeries, R 694
 MTX.BasesMaximalSubmodules, R 694
 MTX.BasesMinimalSubmodules, R 693
 MTX.BasesMinimalSupermodules, R 694
 MTX.BasesSubmodules, R 693
 MTX.BasisInOrbit, R 695
 MTX.BasisRadical, R 694
 MTX.BasisSocle, R 694
 MTX.CollectedExceptions, R 694
 MTX.CompositionFactors, R 694
 MTX.DegreeSplittingField, R 693
 MTX.Dimension, R 693
 MTX.Distinguish, R 695
 MTX.Field, R 693
 MTX.Generators, R 693
 MTX.Homomorphism, R 695
 MTX.Homomorphisms, R 695
 MTX.InducedAction, R 694
 MTX.InducedActionFactorMatrix, R 694
 MTX.InducedActionFactorModule, R 694
 MTX.InducedActionMatrix, R 694
 MTX.InducedActionMatrixNB, R 694
 MTX.InducedActionSubmodule, R 694
 MTX.InducedActionSubmoduleNB, R 694
 MTX.InvariantBilinearForm, R 695
 MTX.InvariantQuadraticForm, R 695
 MTX.InvariantSesquilinearForm, R 695
 MTX.IsAbsolutelyIrreducible, R 693
 MTX.IsEquivalent, R 695
 MTX.IsIrreducible, R 693
 MTX.Isomorphism, R 695
 MTX.NormedBasisAndBaseChange, R 694
 MTX.OrthogonalSign, R 695
 MTX.ProperSubmoduleBasis, R 693
 MTX.SubGModule, R 693
 MTX.SubmoduleGModule, R 693

multiplication, R 48
 matrices, R 220
 matrix and matrix list, R 221
 matrix and scalar, R 219
 matrix and vector, R 220
 operation, R 292
 scalar and matrix, R 219
 scalar and matrix list, R 221
 scalar and vector, R 211
 vector and matrix, R 220
 vector and matrix list, R 221
 vector and scalar, R 211
 vectors, R 211
 MultiplicationTable, R 317
 Multiplicative Arithmetic for Lists, *R 183*
 Multiplicative Arithmetic Functions, *R 139*
 MultiplicativeNeutralElement, R 319
 multiplicative order of an integer, R 136
 MultiplicativeZero, R 319
 MultiplicativeZeroOp, R 289
 multiplicity, of constituents of a group character,
 R 772
 multiplier, R 378
 multisets, R 192
 Multivariate Polynomials, *R 672*
 MultRowVector, R 214
 Murnaghan components, R 784
 Mutability and Copyability, *R 111*
 Mutability and Copying, *P 29*
 Mutability Status and List Arithmetic, *R 186*
 Mutable Bases, *R 601*
 MutableBasis, R 601
 MutableBasisOfClosureUnderAction, R 620
 MutableBasisOfIdealInNonassociativeAlgebra,
 R 621
 MutableBasisOfNonassociativeAlgebra, R 621
 MutableCopyMat, R 224
 MutableIdentityMat, R 224
 MutableNullMat, R 224

N

n_k , R 160
 Name, R 114
 NameFunction, R 61
 NameRNam, R 262
 NamesFilter, R 117
 NamesGVars, R 45
 NamesLocalVariablesFunction, R 61

- NamesOfComponents, P 21
- NamesOfFusionSources, R 803
- NamesSystemGVars, R 45
- NamesUserGVars, R 45
- Naming Conventions, *T* 79
- NaturalCharacter, R 770
- Natural Embeddings related to Magma Rings, *R* 660
- NaturalHomomorphismByGenerators, R 305
- NaturalHomomorphismByIdeal, R 626
- NaturalHomomorphismByNormalSubgroup, R 368
- NaturalHomomorphismByNormalSubgroupNC, R 368
- NaturalHomomorphismBySubAlgebraModule, R 633
- NaturalHomomorphismBySubspace, R 606
- NearAdditiveGroup, R 554
- NearAdditiveGroupByGenerators, R 554
- NearAdditiveMagma, R 554
- NearAdditiveMagmaByGenerators, R 554
- NearAdditiveMagmaWithZero, R 554
- NearAdditiveMagmaWithZeroByGenerators, R 554
- NearlyCharacterTablesFamily, R 726
- negative number, R 48
- NegativeRoots, R 642
- NegativeRootVectors, R 642
- NestingDepthA, R 181
- NestingDepthM, R 182
- New Arithmetic Operations vs. New Objects, *P* 63
- NewAttribute, P 17
 - example, P 37
 - mutable, P 17
- NewCategory, P 16
- NewDictionary, N 9
- NewFamily, P 19
- NewFilter, P 18
- NewInfoClass, R 79
- newline, R 41
- newline character, R 247
- NewmanInfinityCriterion, R 475
- NewOperation, P 18
- New Presentations and Presentations for Subgroups, *R* 470
- NewProperty, P 17
- NewRepresentation, P 17
 - example, P 38
- NewType, P 20
- NextIterator, R 274
- NextPrimeInt, R 131
- NF, R 588
- NiceBasis, R 608
- NiceBasisFiltersInfo, R 609
- NiceFreeLeftModule, R 608
- NiceFreeLeftModuleInfo, R 608
- NiceMonomorphism, R 385
- NiceMonomorphismAutomGroup, R 388
- Nice Monomorphisms, *R* 385, *T* 56
- NiceObject, R 385
- NiceVector, R 608
- NilpotencyClassOfGroup, R 362
- NilpotentQuotientOfFpLieAlgebra, R 649
- NK, R 160
- NOAUTO, R 841
- NOfCyc, *T* 79
- NonnegativeIntegers, R 125
- NonnegIntScalarProducts, R 810
- NonNilpotentElement, R 647
- Norm, R 576
 - of character, R 772
- NormalBase, R 578
- NormalClosure, R 358
- NormalFormIntMat, R 239
- Normal Forms of Integer Matrices - Name Changes, *R* 845
- Normal Forms over the Integers, *R* 237
- NormalIntersection, R 358
- NormalizedElementOfMagmaRingModuloRelations, R 661
- NormalizedWhitespace, R 251
- Normalizer, R 357
- normalizer, R 357
- NormalizerInGLnZ, R 429
- NormalizerInGLnZBravaisGroup, R 429
- NormalizersTom, R 708
- NormalizerTom, R 708
- NormalizeWhitespace, R 251
- NormalSeriesByPcgs, R 442
- Normal Structure, *R* 357
- NormalSubgroupClasses, R 760
- NormalSubgroupClassesInfo, R 760
- NormalSubgroups, R 370
- NormedRowVector, R 212
- NormedRowVectors, R 605
- NormedVectors, R 845
- not, R 168
- Notions of Generation, *T* 69
- NrArrangements, R 147
- NrBasisVectors, R 601
- NrCombinations, R 146

- NrConjugacyClasses, R 356
 - for character tables, R 731
 - NrConjugacyClassesGL, R 512
 - NrConjugacyClassesGU, R 512
 - NrConjugacyClassesPGL, R 512
 - NrConjugacyClassesPGU, R 512
 - NrConjugacyClassesPSL, R 512
 - NrConjugacyClassesPSU, R 512
 - NrConjugacyClassesSL, R 512
 - NrConjugacyClassesSLIsogeneous, R 512
 - NrConjugacyClassesSU, R 512
 - NrConjugacyClassesSUIsogeneous, R 512
 - NrDerangements, R 149
 - NrInputsOfStraightLineProgram, R 335
 - NrMovedPoints, R 409
 - NrOrderedPartitions, R 151
 - NrPartitions, R 150
 - NrPartitionsSet, R 149
 - NrPartitionTuples, R 152
 - NrPermutationsList, R 148
 - NrPolyhedralSubgroups, R 741
 - NrPrimitiveGroups, R 523
 - NrRestrictedPartitions, R 151
 - NrSubsTom, R 704
 - NrTransitiveGroups, R 514
 - NrTuples, R 148
 - NrUnorderedTuples, R 147
 - NullAlgebra, R 615
 - NullMat, R 223
 - NullspaceIntMat, R 236
 - NullspaceMat, R 225
 - NullspaceMatDestructive, R 225
 - NullspaceModQ, R 234
 - Number, R 198
 - number, Bell, R 145
 - binomial, R 144
 - Stirling, of the first kind, R 145
 - Stirling, of the second kind, R 146
 - NumberArgumentsFunction, R 61
 - NumberFFVector, R 213
 - number field, R 589
 - number fields, Galois group, R 592
 - NumberIrreducibleSolvableGroups, R 525
 - NumberPerfectGroups, R 519
 - NumberPerfectLibraryGroups, R 519
 - NumberSmallGroups, R 516
 - NumberSyllables, R 331
 - Numerator, T 79
 - numerator, of a rational, R 143
 - NumeratorOfModuloPcgs, R 438
 - NumeratorOfRationalFunction, R 667
 - NumeratorRat, R 143
 - Numerical Group Attributes, R 364
- ## O
- O, Operation mark-up, E 16
 - $O_p(G)$, see PCore, R 357
 - ObjByExtRep, P 29, R 654
 - Objectify, P 20
 - ObjectifyWithAttributes, P 20
 - Objects, R 109
 - objects, T 22
 - objects, vs. elements, T 24
 - vs. variables, T 22
 - obsolete, R 844
 - OCOneCocycles, R 377
 - octal character codes, R 247
 - OctaveAlgebra, R 614
 - od, R 53
 - OldGeneratorsOfPresentation, R 493
 - Omega, R 361
 - ONanScottType, R 413
 - OnBreak, R 68
 - OnBreakMessage, R 69
 - One, N 17, R 288
 - OneAttr, R 288
 - OneCoboundaries, R 376
 - OneCocycles, R 376
 - one cohomology, R 375
 - OneFactorBound, R 674
 - OneImmutable, R 288
 - OneIrreducibleSolvableGroup, R 525
 - OneLibraryGroup, R 514
 - OneMutable, R 288
 - OneOfPcgs, R 433
 - OneOp, R 288
 - OnePrimitiveGroup, R 514
 - OneSameMutability, R 288
 - OneSM, R 288
 - OneSmallGroup, R 516
 - OneTransitiveGroup, R 514
 - OnIndeterminates, R 672
 - as a permutation action, R 394
 - OnLeftInverse, R 393
 - OnLines, R 394
 - example, R 509

- OnPairs, R 393
- OnPoints, R 393
- OnRight, R 393
- OnSets, R 393
- OnSetsDisjointSets, R 394
- OnSetsSets, R 393
- OnSetsTuples, R 394
- OnSubspacesByCanonicalBasis, R 395
- OnTuples, R 393
- OnTuplesSets, R 394
- OnTuplesTuples, R 394
- Operation, R 844
- operation, P 11
- OperationAlgebraHomomorphism, R 626
- Operational Structure of Domains, R 282
- Operation Functions, E 48
- OperationHomomorphism, R 844
- operations, T 75
 - for booleans, R 167
- Operations and Attributes for Vector Spaces, R 595
- Operations and Mathematical Terms, P 14
- Operations and Methods, P 11
- Operations applicable to All Streams, R 97
- Operations Concerning Blocks, R 736
- Operations for (Near-)Additive Magmas, R 556
- Operations for Abelian Number Fields, R 588
- operations for algebraic elements, R 687
- Operations for Associative Words, R 330
- Operations for Associative Words by their Syllables, R 331
- Operations for Booleans, R 167
- Operations for Brauer Characters, R 794
- Operations for Class Functions, R 771
- Operations for Collections, R 270
- Operations for Cyclotomics, R 154
- Operations for Domains, R 287
- Operations for Finite Field Elements, R 581
- Operations for Finitely Presented Groups, R 461
- Operations for Group Homomorphisms, R 382
- Operations for Input Streams, R 98
- Operations for Lists, R 194
- Operations for Output Streams, R 100
- Operations for Pc Groups, R 453
- Operations for Rational Functions, R 666
- Operations for Special Kinds of Bases, R 600
- Operations for Stabilizer Chains, R 419
- Operations for Vector Space Bases, R 598
- Operations for Words, R 323
- Operations on elements of the algebra, R 341
- Operations on hom cosets, N 14
- Operations on rewriting systems, R 340
- Operations Records, T 82
- Operations to Evaluate Strings, R 253
- Operations to Produce or Manipulate Strings, R 250
- Operations vs. Dispatcher Functions, T 82
- Operations which have Special Methods for Groups
 - with Pcgs, R 446
- operators, R 42, T 21
 - arithmetic, R 48
 - associativity, R 49
 - for cyclotomics, R 158
 - for lists, R 180
 - precedence, R 49
- Operators for Character Tables, R 729
- Operators for Matrices, R 219
- Operators for Row Vectors, R 210
- Optimization and Compiler Options, R 833
- options, R 825
 - command line, filenames, R 29
 - command line, internal, R 31
- options, under UNIX, R 27
- or, R 167
- Orbit, R 395, T 78
- OrbitFusions, R 804
- OrbitGenerators, N 16
- OrbitGeneratorsInv, N 17
- OrbitGeneratorsOfGroup, N 20
- OrbitishF0, E 49
- OrbitLength, R 396
- OrbitLengths, R 396
- OrbitLengthsDomain, R 396
- OrbitPerms, R 411
- OrbitPowerMaps, R 799
- Orbits, E 48
 - operation/attribute, R 396
- Orbits, R 395
- OrbitsDomain, R 396
- OrbitsishOperation, E 48
- OrbitsPerms, R 411
- OrbitStabChain, R 420
- OrbitStabilizer, R 397
- OrbitStabilizerAlgorithm, R 397
- Orbit Stabilizer Methods for Polycyclic Groups, R 446
- Order, R 291, T 78
 - of a class function, R 768

- order, of a group, R 345
 - of a list, collection or domain, R 269
 - of the prime residue group, R 135
- OrderedPartitions, R 150
- ordered partitions, *E* 55
- ordering, booleans, R 167
 - of records, R 261
- OrderingByLessThanFunctionNC, R 276
- OrderingByLessThanOrEqualFunctionNC, R 276
- OrderingOfRewritingSystem, R 340
- OrderingOnGenerators, R 278
- OrderingsFamily, R 276
- Orderings on families of associative words, *R* 278
- OrderMod, R 136
- OrderOfRewritingSystem, R 340
- OrdersClassRepresentatives, R 732
- OrdersTom, R 704
- Ordinal, R 254
- ordinary character, R 771
- OrdinaryCharacterTable, R 731
- OrthogonalComponents, R 784
- Orthogonal Embeddings, *R* 243
- OrthogonalEmbeddings, R 243
- OrthogonalEmbeddingsSpecialDimension, R 780
- OSX, R 835
- Other Filters, *R* 124
- Other Operations Applicable to any Object, *R* 114
- Other Operations for Character Tables, *R* 740
- Other Operations for Tables of Marks, *R* 708
- output, suppressing, R 64
- OutputLogTo, R 94
 - for streams, R 101
 - stop logging output, R 94
- OutputTextFile, R 102
- OutputTextNone, R 105
- OutputTextString, R 103
- OutputTextUser, R 103
- overload, P 14
- P**
- P, Property mark-up, E 16
- p -group, R 363
- package, R 840
- Package Completion, *E* 40
- Package Interface - Obsolete Functions and Name Changes, *R* 844
- Packages, *R* 829
- PadicCoefficients, R 241
- PadicExtensionNumberFamily, R 690
- PadicNumber, R 690
 - for pure padics, R 689
- PadicValuation, R 565
- Pager, R 25
- Parametrized, R 807
- Parametrized Maps, *R* 805
- parametrized maps, R 796
- Parent, R 286
- ParentPcgs, R 436
- Parents, *R* 286
- Parents and Subgroups, *T* 83
- PartialFactorization, R 132
- Partial Methods, *P* 13
- partial order, R 311
- PartialOrderByOrderingFunction, R 312
- PartialOrderOfHasseDiagram, R 311
- Partitions, R 150
- partitions, improper, of an integer, R 151
 - ordered, of an integer, R 151
 - restricted, of an integer, R 151
- PartitionsGreatestEQ, R 151
- PartitionsGreatestLE, R 151
- PartitionsSet, R 149
- PartitionTuples, R 152
- PcElementByExponents, R 434
- PcElementByExponentsNC, R 434
- PCentralLieAlgebra, R 646
- PCentralNormalSeriesByPcgsPGroup, R 441
- PCentralSeries, R 367
- PcGroupCode, R 457
- PcGroupCodeRec, R 457
- PcGroupFpGroup, R 450
- Pc groups versus fp groups, *R* 450
- PcGroupWithPcgs, R 452
- Pcgs, R 432
- Pcgs.OrbitStabilizer, R 446
- Pcgs and Normal Series, *R* 440
- PcgsByPcSequence, R 432
- PcgsByPcSequenceNC, R 432
- PcgsCentralSeries, R 440
- PcgsChiefSeries, R 441
- PcgsElementaryAbelianSeries, R 440
- PcgsPCentralSeriesPGroup, R 441
- PClassPGroup, R 364
- PCore, R 357
- PcSeries, R 433
- PerfectGroup, R 518

- perfect groups, R 518
- PerfectIdentification, R 519
- PerfectResiduum, R 359
- Perform, R 196
- Permanent, R 153
- Permanent of a Matrix, *R 153*
- PermBounds, R 793
- PermCharInfo, R 788
- PermCharInfoRelative, R 789
- PermChars, R 790
- PermCharsTom, R 717
- PermComb, R 793
- PermGroupOps.ElementProperty, T 78
- PermLeftQuoTransformation, R 552
- PermList, R 410
- PermListList, R 196
- Permutation, R 401
- PermutationCharacter, R 771
- permutation character, R 816
- permutation characters, possible, R 787
- PermutationCycle, R 401
- PermutationCycleOp, R 401
- Permutation groups, *T 44*
- PermutationMat, R 223
- PermutationsFamily, R 407
- Permutations Induced by Elements and Cycles,
R 401
- PermutationsList, R 148
- PermutationTom, R 703
- Permuted, R 197
 - as a permutation action, R 395
 - for class functions, R 768
- PGL, R 511
- PGU, R 511
- Phi, R 135
- Plain Lists, *T 27*
- Plain Records, *T 38*
- point stabilizer, R 397
- Polycyclic Generating Systems, *R 431*
- PolynomialByExtRep, R 685
- PolynomialByExtRepNC, R 685
- PolynomialCoefficientsOfPolynomial, R 670
- PolynomialDivisionAlgorithm, R 681
- Polynomial Factorization, *R 673*
- PolynomialModP, R 673
- PolynomialReducedRemainder, R 681
- PolynomialReduction, R 680
- PolynomialRing, R 676
- Polynomial Rings, *R 676*
- Polynomials, *T 85*
- Polynomials as Univariate Polynomials in one Indeterminate, *R 670*
- polynomials over abelian number fields, factors, R 588
- Polynomials over the Rationals, *R 673*
- PopOptions, R 87
- Portability, *R 89*
- Porting GAP, *R 834*
- Position, R 187, T 78
- Positional Objects, *P 22*
- PositionBound, R 188
- PositionCanonical, R 187
- PositionFirstComponent, R 189
- PositionNonZero, R 189
- PositionNot, R 189
- PositionNthOccurrence, R 187
- PositionProperty, R 188
- PositionSet, R 188
- PositionSorted, R 187
- PositionStream, R 99
- PositionSublist, R 189
- Position vs. PositionCanonical, T 49
- PositionWord, R 330
- PositiveIntegers, R 125
- positive number, R 48
- PositiveRoots, R 642
- PositiveRootVectors, R 642
- PossibleClassFusions, R 803
- PossibleFusionsCharTableTom, R 716
- Possible Permutation Characters, *R 787*
- possible permutation characters, R 790
- PossiblePowerMaps, R 797
- power, R 48
 - matrix, R 220
 - meaning for class functions, R 767
 - of words, R 330
- PowerMap, R 797
- PowerMapByComposition, R 799
- PowerMapOp, R 797
- Power Maps, *R 796*
- PowerMapsAllowedBySymmetrizations, R 814
- PowerMod, R 567
- PowerModCoeffs, R 216
- PowerModInt, R 130
- PowerPartition, R 152
- powerset, R 146

- PowerSubalgebraSeries, R 619
- PQuotient, R 472
- precedence, R 48
- precedence test, for permutations, R 408
- PreferredGenerators, N 17
- PrefrattiniSubgroup, R 359
 - for groups with pcgs, R 446
- PreImage, R 304
- PreImageElm, R 304
- PreImages, R 304
- PreImagesElm, R 303
- Preimages in the Free Group, *R 460*
- Preimages in the Free Semigroup, *R 546*
- PreimagesOfTransformation, R 551
- PreImagesRange, R 303
- PreImagesRepresentative, R 304
- PreImagesSet, R 304
- Preimages under Homomorphisms from an FpGroup, *R 471*
- Preimages under Mappings, *R 303*
- preorder, R 311
- PresentationFpGroup, R 477
- PresentationNormalClosure, R 482
- PresentationNormalClosureRrs, R 482
- PresentationSubgroup, R 480
- PresentationSubgroupMtc, R 481
- PresentationSubgroupRrs, R 480
- PresentationViaCosetTable, R 478
- previous result, R 64
- PrevPrimeInt, R 131
- PrimaryGeneratorWords, R 481
- primary subgroup generators, R 495
- PrimeBlocks, R 736
- PrimeBlocksOp, R 736
- PrimeField, R 575
- Prime Integers and Factorization, *R 130*
- PrimePGroup, R 364
- PrimePowersInt, R 133
- prime residue group, R 135
 - exponent, R 136
 - generator, R 137
 - order, R 135
- Prime Residues, *R 135*
- PrimeResidues, function, R 135
- Primes, R 130
- primitive, R 403
- PRIMITIVE_INDICES_MAGMA, R 524
- PrimitiveElement, R 575
- PrimitiveGroup, R 523
- Primitive Groups, *R 413*
- PrimitiveGroupsIterator, R 523
- PrimitiveIdentification, R 524
- PrimitiveIndexIrreducibleSolvableGroup, R 525
- Primitive Permutation Groups, *R 522*
- PrimitivePolynomial, R 673
- PrimitiveRoot, R 583
- PrimitiveRootMod, R 137
- primitive root modulo an integer, R 137
- Primitive Roots and Discrete Logarithms, *R 136*
- Primitivity of Characters, *R 819*
- Print, R 65, T 78
- PrintAmbiguity, R 810
- PrintArray, R 224
- PrintCharacterTable, R 745
- PrintFactorsInt, R 133
- PrintFormattingStatus, R 101
- PrintHashWithNames, N 10
- Printing, Viewing and Displaying Finite Field Elements, *R 585*
- Printing Character Tables, *R 742*
- Printing Class Functions, *R 768*
- Printing Presentations, *R 483*
- Printing Tables of Marks, *R 701*
- PrintObj, R 66
 - for character tables, R 768
 - for tables of marks, R 701
- PrintTo, R 94, T 78
 - for streams, R 100
- ProbabilityShapes, R 674
- problems, R 831
- Problems on Particular Systems, *R 833*
- procedure call, R 50
- Procedure Calls, *R 50*
- procedure call with arguments, R 50
- Process, R 107
- Process, *R 107*
- PROD_GF2MAT_GF2MAT_ADVANCED, R 234
- PROD_GF2MAT_GF2MAT_SIMPLE, R 234
- Producing a Manual, *E 26*
- Product, R 200
- product, of words, R 330
 - rational functions, R 666
- ProductCoeffs, R 216
- ProductOfStraightLinePrograms, R 338
- ProductSpace, R 619

- ProductX, R 202
 - ProfileFunctions, R 82
 - ProfileGlobalFunctions, R 82
 - ProfileMethods, R 81
 - ProfileOperations, R 81
 - ProfileOperationsAndMethods, R 81
 - PROFILETHRESHOLD, R 82
 - Profiling, *R 81*
 - ProjectedInducedPcgs, R 439
 - ProjectedPcElement, R 439
 - Projection, N 18, R 301
 - example for direct products, R 500
 - example for semidirect products, R 502
 - example for subdirect products, R 503
 - example for wreath products, R 503
 - for group products, R 505
 - ProjectionMap, R 806
 - projections, find all, R 389
 - ProjectiveActionHomomorphismMatrixGroup, R 426
 - ProjectiveActionOnFullSpace, R 426
 - ProjectiveGeneralLinearGroup, R 511
 - ProjectiveGeneralUnitaryGroup, R 511
 - ProjectiveOrder, R 233
 - ProjectiveSpecialLinearGroup, R 511
 - ProjectiveSpecialUnitaryGroup, R 511
 - ProjectiveSymplecticGroup, R 511
 - prompt, R 64
 - partial, R 64
 - Properties, *R 123*
 - Properties and Attributes for Lists, *R 189*
 - Properties and Attributes of (General) Mappings, *R 301*
 - Properties and Attributes of Binary Relations, *R 310*
 - Properties and Attributes of Matrices, *R 221*
 - Properties and Attributes of Rational Functions, *R 667*
 - Properties and basic functionality, *R 277*
 - Properties and Filters, *T 73*
 - Properties of a Lie Algebra, *R 640*
 - Properties of rewriting systems, *R 342*
 - Properties of Rings, *R 562*
 - Properties of Tables of Marks, *R 707*
 - PRump, R 360
 - PseudoRandom, R 273
 - PSL, R 511
 - PSP, R 511
 - PSP, R 511
 - PSU, R 511
 - PthPowerImage, R 646
 - PthPowerImages, R 646
 - Pure p-adic Numbers, *R 689*
 - PurePadicNumberFamily, R 689
 - PushOptions, R 87
- ## Q
- Quadratic, R 161
 - quadratic residue, R 138
 - QuaternionAlgebra, R 614
 - QUIET, R 845
 - QUIT, emergency quit, R 73
 - quit, in emergency, R 73
 - quit, R 67, T 18
 - QUITTING, R 73
 - QuoInt, R 128
 - Quotient, R 558
 - quotient, for finitely presented groups, R 459
 - matrices, R 220
 - matrix and matrix list, R 221
 - matrix and scalar, R 220
 - of free monoid, R 547
 - of free semigroup, R 545
 - of words, R 330
 - rational functions, R 666
 - scalar and matrix, R 220
 - scalar and matrix list, R 221
 - vector and matrix, R 220
 - QuotientFromSCTable, R 613
 - QuotientGroup, N 18
 - QuotientGroupByChainHomomorphicImage, N 21
 - QuotientGroupByHomomorphism, N 14
 - QuotientGroupByImages, N 14
 - QuotientGroupByImagesNC, N 14
 - QuotientGroupHom, N 14
 - Quotient Methods, *R 472*
 - QuotientMod, R 567
 - QuotientPolynomialsExtRep, R 686
 - QuotientRemainder, R 566
 - Quotients, *R 537*
 - Quotients and Remainders, *R 128*
 - QuotientSemigroupCongruence, R 537
 - QuotientSemigroupHomomorphism, R 537
 - QuotientSemigroupPreimage, R 537
 - QuotRemLaurpols, R 675
- ## R
- R, Representation mark-up, E 16

- r_N , R 159
- RadicalGroup, R 359
- RadicalOfAlgebra, R 622
- Random, R 272
 - for integers, R 128
 - for rationals, R 143
- RandomBinaryRelationOnPoints, R 312
- random element, of a list or collection, R 272
- Random Elements, *R 272*
- RandomHashKey, N 10
- RandomInvertableMat, T 79
- RandomInvertibleMat, R 225
- RandomIsomorphismTest, R 457
- Random Isomorphism Testing, *R 457*
- Randomized Methods for Permutation Groups, *R 415*
- RandomList, R 273
- RandomMat, R 225
- Random Matrices, *R 225*
- RandomPrimitivePolynomial, R 585
- RandomSchreierSims, N 20
- random seed, R 273
- RandomTransformation, R 550
- RandomUnimodularMat, R 225
- Range, N 15, R 302
- range, R 202
- Ranges, *R 202, T 32*
- RankAction, R 402
- RankFilter, R 116
- RankMat, R 225
- RankOfTransformation, R 551
- RankPGroup, R 364
- Rat, R 143
 - for strings, R 253
- RationalClass, R 356
- RationalClasses, R 357
- RationalFunctionByExtRep, R 685
- RationalFunctionByExtRepNC, R 685
- RationalFunctionByExtRepWithCancellation, R 686
- Rational Function Families, *R 682*
- RationalFunctionsFamily, R 682
- RationalizedMat, R 162
- Rationals, R 142
- RClassOfHClass, R 538
- Read, R 93, T 19
 - for streams, R 98
- read.g, for a GAP package, E 38
- ReadAll, R 99
- ReadAllLine, R 105
- ReadAsFunction, R 93
 - for streams, R 98
- ReadByte, R 98
- read eval print loop, R 64
- read evaluate print loop, *T 19*
- reading source code from a file, T 19
- ReadLine, R 98
- README, for a GAP package, E 36
- ReadPackage, R 841
- ReadPkg, R 844
- ReadTest, R 83
 - for streams, R 98
- RealClasses, R 734
- RealizableBrauerCharacters, R 794
- RecFields, T 79
- RecNames, R 257
- Recognizing Characters, *R 249*
- record, component access, R 258
 - component assignment, R 258
 - component variable, R 258
 - component variable assignment, R 259
- Record Access Operations, *R 262*
- Record Assignment, *R 258*
- record assignment, operation, R 262
- record boundness test, operation, R 262
- record component, operation, R 262
- record unbind, operation, R 262
- Recovery from NoMethodFound-Errors, *R 76*
- Recursion, *T 42*
- recursion, R 55
- Redispatching, *P 13*
- RedispatchOnCondition, P 13
- redisplay a help section, R 23
- redisplay with next help viewer, R 23
- ReduceCoeffs, R 216
- ReduceCoeffsMod, R 216
- ReducedAdditiveInverse, R 341
- ReducedCharacters, R 778
- ReducedClassFunctions, R 777
- ReducedComm, R 341
- ReducedConfluentRewritingSystem, R 548
- ReducedConjugate, R 341
- ReducedDifference, R 341
- ReducedForm, R 340
- ReducedGroebnerBasis, R 682
- ReducedInverse, R 341

- ReducedLeftQuotient, R 341
- ReducedOne, R 341
- ReducedPcElement, R 434
- ReducedPower, R 341
- ReducedProduct, R 341
- ReducedQuotient, R 341
- ReducedScalarProduct, R 341
- ReducedSum, R 341
- ReducedZero, R 341
- ReduceRules, R 341
- ReduceStabChain, R 421
- Reducing Virtual Characters, *R 777*
- Ree, R 508
- ReeGroup, R 508
- ReesCongruenceOfSemigroupIdeal, R 536
- ReesMatrixSemigroup, R 539
- ReesMatrixSemigroupElement, R 540
- Rees Matrix Semigroups, *R 539*
- ReesZeroMatrixSemigroup, R 539
- ReesZeroMatrixSemigroupElement, R 540
- ReesZeroMatrixSemigroupElementIsZero, R 540
- reference to a label, E 15
- RefinedPcGroup, R 452
- ReflectionMat, R 224
- ReflexiveClosureBinaryRelation, R 312
- reflexive relation, R 310
- regular, R 402
- regular action, R 399
- RegularActionHomomorphism, R 400
- RegularModule, R 748
- relations, R 299
- Relations Between Domains, *R 293*
- RelationsOfFpSemigroup, R 546
- RelativeBasis, R 598
- RelativeBasisNC, R 598
- relatively prime, R 48
- RelativeOrderOfPcElement, R 434
- RelativeOrders, of a pcgs, R 433
- Relators in a Presentation, *R 483*
- RelatorsOfFpGroup, R 460
- remainder, operation, R 292
- remainder of a quotient, R 128
- RemInt, R 128
- Remove, R 174
- remove, an element from a set, R 193
- RemoveFile, R 95
- RemoveOuterCoeffs, R 214
- RemoveRelator, R 485
- RemoveSet, R 193
- RemoveStabChain, R 421
- Repeat, *R 52*
- repeat loop, R 52
- ReplacedString, R 251
- Representation, *R 119*
- representation, as a sum of two squares, R 141
- Representations for Associative Words, *R 332*
- Representations for Group Homomorphisms, *R 391*
- Representations given by modules, *R 748*
- Representations of Algebras, *R 627*
- RepresentationsOfObject, R 120
- Representative, R 269
- representative, of a list or collection, R 270
- RepresentativeAction, R 398
- RepresentativeLinearOperation, R 627
- RepresentativeOperation, R 844
- RepresentativesContainedRightCosets, R 354
- RepresentativesFusions, R 804
- RepresentativeSmallest, R 270
- RepresentativesMinimalBlocks, R 403
- RepresentativesPerfectSubgroups, R 372
- RepresentativesPowerMaps, R 799
- RepresentativesSimpleSubgroups, R 372
- RepresentativeTom, R 715
- RepresentativeTomByGenerators, R 715
- RepresentativeTomByGeneratorsNC, R 715
- Requesting one GAP Package from within Another, *E 37*
- RequirePackage, R 844
- Reread, R 95
- REREADING, R 95
- RereadPackage, R 841
- RereadPkg, R 844
- ResetFilterObj, P 18
- ResetOptionsStack, R 87
- residue, quadratic, R 138
- Residue Class Rings, *R 133*
- RespectsAddition, R 307
- RespectsAdditiveInverses, R 307
- RespectsInverses, R 306
- RespectsMultiplication, R 306
- RespectsOne, R 306
- RespectsScalarMultiplication, R 307
- RespectsZero, R 307
- RestoreStateRandom, R 272
- Restricted and Induced Class Functions, *R 775*
- RestrictedClassFunction, R 776

- RestrictedClassFunctions, R 776
 - Restricted Lie algebras, *R 645*
 - RestrictedMapping, R 301
 - RestrictedPartitions, R 151
 - RestrictedPerm, R 410
 - RestrictedPermNC, R 410
 - RestrictedTransformation, R 551
 - RestrictOutputsOfSLP, R 337
 - Resultant, R 671
 - ResultOfStraightLineProgram, R 335
 - Return, *R 58*
 - return, R 68
 - no value, R 58
 - with value, R 58
 - ReturnFail, R 63
 - ReturnFalse, R 63
 - return from break loop, R 68
 - ReturnTrue, R 63
 - Reversed, R 195
 - RewindStream, R 100
 - RewriteWord, R 466
 - Rewriting in Groups and Monoids, *R 342*
 - Rewriting Systems and the Knuth-Bendix Procedure, *R 548*
 - RightActingAlgebra, R 630
 - RightActingRingOfIdeal, R 561
 - RightAlgebraModule, R 628
 - RightAlgebraModuleByGenerators, R 628
 - RightCoset, R 352
 - RightCosets, R 353
 - right cosets, R 352
 - RightCosetsNC, R 353
 - RightDerivations, R 637
 - RightIdeal, R 559
 - RightIdealByGenerators, R 560
 - RightIdealNC, R 560
 - RightModuleByHomomorphismToMatAlg, R 631
 - RightShiftRowVector, R 214
 - RightTransversal, R 353
 - right transversal, T 48
 - Ring, R 557
 - RingByGenerators, R 558
 - Ring Homomorphisms, *R 308*
 - Rings With One, *R 561*
 - RingWithOne, R 561
 - RingWithOneByGenerators, R 562
 - RNamObj, R 262
 - root, of 1 modulo an integer, R 139
 - of an integer, R 127
 - of an integer, smallest, R 127
 - of an integer modulo another, R 138
 - RootInt, R 127
 - RootMod, R 138
 - RootOfDefiningPolynomial, R 575
 - RootsMod, R 138
 - Roots Modulo Integers, *R 137*
 - roots of unity, R 154
 - RootsOfUPol, R 670
 - RootsUnityMod, R 139
 - RootSystem, R 642
 - RoundCyc, R 156
 - Row and Matrix Spaces, *R 602*
 - RowIndexOfReesMatrixSemigroupElement, R 540
 - RowIndexOfReesZeroMatrixSemigroupElement, R 540
 - row spaces, R 602
 - Row Vectors over Finite Fields, *R 212*
 - Rules, R 340
 - Running GAP under MacOS, *R 31*
 - Runtime, R 81
 - Runtimes, R 80
- ## S
- s_N , R 159
 - SameBlock, R 737
 - SandwichMatrixOfReesMatrixSemigroup, R 540
 - SandwichMatrixOfReesZeroMatrixSemigroup, R 540
 - save, R 37
 - SaveOnExitFile, R 73
 - SaveWorkspace, R 37
 - Saving and Loading a Workspace, *R 37*
 - Saving a Pc Group, *R 453*
 - saving on exit, R 73
 - ScalarProduct, for characters, R 772
 - Schreier, R 480
 - Schreier-Sims, random, R 415
 - SchreierTransversal, N 16
 - SchreierTreeDepth, N 17
 - SchurCover, R 378
 - Schur Covers and Multipliers, *R 378*
 - Schur multiplier, R 378
 - scope, R 43
 - ScriptFromString, R 712
 - Searching for Homomorphisms, *R 389*
 - SecHMSM, R 255

- secondary subgroup generators, R 495
- SecondsDMYhms, R 255
- SeekPositionStream, R 100
- Selecting a Different MeatAxe, R 693
- Selection Functions, R 513
- SemidirectProduct, R 501
- Semidirect Products, R 501
- SemiEchelonBasis, R 604
- SemiEchelonBasisNC, R 604
- SemiEchelonMat, R 227
- SemiEchelonMatDestructive, R 228
- SemiEchelonMats, R 228
- SemiEchelonMatsDestructive, R 228
- SemiEchelonMatTransformation, R 228
- Semigroup, R 534
- semigroup, R 534
- SemigroupByGenerators, R 534
- SemigroupByMultiplicationTable, R 535
- SemigroupIdealByGenerators, R 536
- SemigroupOfRewritingSystem, R 549
- semiregular, R 402
- Semisimple Lie Algebras and Root Systems, R 641
- SemiSimpleType, R 641
- sequence, Bernoulli, R 145
 - Fibonacci, R 152
 - Lucas, R 153
- Series of Ideals, R 639
- Set, R 266
- SetAssertionLevel, R 80
- SetCommutator, R 451
- SetConjugate, R 451
- SetCrystGroupDefaultAction, R 430
- set difference, of collections, R 271
- SetElmWPObj, E 52
- SetEntrySCTable, R 612
- SetFilterObj, P 18
- SetGasmanMessageStatus, R 86
- SetHashEntry, N 12
- SetHashEntryAtLastIndex, N 12
- SetHelpViewer, R 24
- SetIndeterminateName, R 665
- SetInfoLevel, R 79
- SetName, R 114
- Set Operations via Boolean Lists, R 207
- SetParent, R 286
- SetPower, R 451
- SetPrintFormattingStatus, R 101
- SetRecursionTrapInterval, R 85
- SetReducedMultiplication, R 460
- Sets, R 110, T 31
- sets, R 192
- Sets of Subgroups, R 369
- set stabilizer, R 397
- Setter, R 121
- setter, R 121
 - of an attribute, T 72
- Setter and Tester for Attributes, R 121
- SetX, R 202
- ShallowCopy, R 113, T 80
 - for lists, R 177
- ShiftedCoeffs, R 216
- ShiftedPadicNumber, R 689
- Shifting and Trimming Coefficient Lists, R 214
- ShortestVectors, R 243
- ShortLexOrdering, R 279
- short vectors spanning a lattice, R 778
- ShowArgument, R 76
- ShowArguments, R 76
- ShowDetails, R 76
- ShowImpliedFilters, R 117
- ShowMethods, R 77
- ShowOtherMethods, R 77
- ShrinkCoeffs, R 217
- ShrinkRowVector, R 214
- Sift, for chains of subgroups, N 19
- SiftedPcElement, R 434
- SiftedPermutation, R 420
- SiftedVector, R 605
- SiftOneLevel, for chains of subgroups, N 19
 - for subgroup transversals, N 16
- Sigma, R 139
- sign, of an integer, R 126
- Sign and Cycle Structure, R 409
- SignInt, R 126
- SignPartition, R 151
- SignPerm, R 409
- SimpleLieAlgebra, R 637
- SimpleSystem, R 642
- SimplifiedFpGroup, R 479
- SimplifiedFpGroup, R 479
- SimplifyPresentation, R 486
- SimsNo, R 524
- SimultaneousEigenvalues, R 234
- SingleCollector, R 451
- singlequote character, R 247
- singlequotes, R 245

- SINT.CHAR, R 253
- Size, R 269
 - for character tables, R 731
 - for groups with pcgs, R 446
- size, of a list or collection, R 269
- SizeBlist, R 207
- SizeConsiderFunction, R 374
- SizeNumbersPerfectGroups, R 519
- SizeOfChainOfGroup, N 20
- SizeOfFieldOfDefinition, R 794
- SizesCentralizers, R 732
- SizesConjugacyClasses, R 732
- SizeScreen, R 75
- SizeScreen, *R 75*
- SizesPerfectGroups, R 518
- SizeStabChain, R 419
- SL, R 509
- smaller, associative words, R 329
 - elements of finitely presented groups, R 460
 - nonassociative words, R 323
 - pcwords, R 449
 - rational functions, R 667
- SmallerDegreePermutationRepresentation, R 412
- smaller or equal, R 47
- smaller test, R 47
- SmallestGeneratorPerm, R 408
- SmallestMovedPoint, R 408
- SmallestRootInt, R 127
- SmallGeneratingSet, R 375
- SmallGroup, R 516
- Small Groups, *R 515*
- SmallGroupsInformation, R 516
- Smash MeatAxe Flags, *R 697*
- smith normal form, R 845
- SmithNormalFormIntegerMat, R 238
- SmithNormalFormIntegerMatTransforms, R 238
- SMTX.AbsoluteIrreducibilityTest, R 696
- SMTX.AlgEl, R 697
- SMTX.AlgElCharPol, R 697
- SMTX.AlgElCharPolFac, R 697
- SMTX.AlgElMat, R 697
- SMTX.AlgElNullspaceDimension, R 697
- SMTX.AlgElNullspaceVec, R 697
- SMTX.CentMat, R 697
- SMTX.CentMatMinPoly, R 697
- SMTX.CompleteBasis, R 696
- SMTX.Getter, R 696
- SMTX.GoodElementGModule, R 696
- SMTX.IrreducibilityTest, R 696
- SMTX.MatrixSum, R 696
- SMTX.MinimalSubGModule, R 696
- SMTX.MinimalSubGModules, R 696
- SMTX.RandomIrreducibleSubGModule, R 696
- SMTX.Setter, R 696
- SMTX.SortHomGModule, R 696
- SMTX.Subbasis, R 697
- SO, R 510
- Socle, R 360
- SocleTypePrimitiveGroup, R 413
- SolutionIntMat, R 236
- SolutionMat, R 226
- SolutionMatDestructive, R 226
- SolutionNullspaceIntMat, R 236
- Some Remarks about Character Theory in GAP, *R 720*
- Some Special Algebras, *R 614*
- Something, T 70
- Sort, R 191
- SortedCharacters, R 756
- SortedCharacterTable, R 756
- Sorted Character Tables, *R 755*
- SortedList, R 266
- sorted list, R 190
- Sorted Lists and Sets, *R 192*
- sorted lists as collections, R 264
- SortedSparseActionHomomorphism, R 399
- SortedTom, R 702
- Sortex, R 191
- Sorting Lists, *R 191*
- SortingPerm, R 192
- Sorting Tables of Marks, *R 702*
- SortParallel, R 191
- Source, N 15, R 302
- SourceElt, N 14
- SourceOfIsoclinicTable, R 754
- SP, R 510
- Sp, R 510
- space, R 41
- SparseActionHomomorphism, R 399
- SparseCartanMatrix, R 643
- SparseHashTable, N 11
- Sparse hash tables, *N 11*
- SparseIntKey, N 11
- Special Characters, *R 247*
- special character sequences, R 247

- Special Filenames, *R* 92
- Special Generating Sets, *R* 375
- SpecialLinearGroup, *R* 509
- Special Multiplication Algorithms for Matrices over $\text{GF}(2)$, *R* 234
- SpecialOrthogonalGroup, *R* 510
- Special Pcgs, *R* 443
- SpecialPcgs, attribute, *R* 443
- SpecialUnitaryGroup, *R* 510
- Specific and Parametrized Subgroups, *R* 358
- Specific Methods for Subgroup Lattice Computations, *R* 372
- SplitCharacters, *R* 750
- SplitExtension, *R* 455
- SplitExtensions, *R* 456
- SplitString, *R* 250
- SplittingField, *R* 669
- Sqrt, *R* 292
- square root, of an integer, *R* 127
- SquareRoots, *R* 320
- SSortedList, *R* 266
- StabChain, *R* 417
- StabChainBaseStrongGenerators, *R* 418
- StabChainImmutable, *R* 417
- StabChainMutable, *R* 417
- StabChainOp, *R* 417
- StabChainOptions, *R* 418
- Stabiliser chain subgroups, *N* 20
- Stabilizer, *R* 397
- Stabilizer Chain Records, *R* 418
- Stabilizer Chains, *R* 414
- Stabilizer Chains for Automorphisms Acting on Enumerators, *E* 61
- StabilizerOfExternalSet, *R* 405
- StabilizerPcgs, *R* 446
- Stabilizers, *R* 397
- Standalone Programs in a GAP Package, *E* 38
- StandardAssociate, *R* 564
- StandardGeneratorsFunctions, *R* 712
- StandardGeneratorsInfo, for groups, *R* 711
 - for tables of marks, *R* 716
- StandardGeneratorsOfGroup, *R* 713
- Standard Generators of Groups, *R* 711
- Standardization of coset tables, *R* 465
- StandardizeTable, *R* 465
- StarCyc, *R* 161
- Starting and Leaving GAP, *T* 18
- starting GAP, *T* 18
- Statements, *R* 49
- StateRandom, *R* 272
- Stirling1, *R* 145
- Stirling2, *R* 146
- Stirling number of the first kind, *R* 145
- Stirling number of the second kind, *R* 146
- StoredGroebnerBasis, *R* 682
- StoreFusion, *R* 802
- Storing Normal Subgroup Information, *R* 760
- StraightLineProgElm, *R* 338
- StraightLineProgGens, *R* 339
- StraightLineProgram, *R* 334
- Straight Line Program Elements, *R* 338
- StraightLineProgramNC, *R* 334
- Straight Line Programs, *R* 334
- StraightLineProgramsTom, *R* 714
- StratMeetPartition, *E* 59
- StreamsFamily, *R* 97
- StretchImportantSLPElement, *R* 339
- strictly sorted list, *R* 190
- String, *R* 250
 - for cyclotomics, *R* 156
- StringDate, *R* 255
- StringOfResultOfStraightLineProgram, *R* 336
- StringPP, *R* 250
- strings, *T* 29
 - equality of, *R* 249
 - inequality of, *R* 249
 - lexicographic ordering of, *R* 249
- String Streams, *R* 103
- StringTime, *R* 255
- StrongGeneratorsStabChain, *R* 419
- StrongGens, *N* 20
- StronglyConnectedComponents, *R* 312
- Struct, *R* 283
- StructByGenerators, *R* 284
- StructuralCopy, *R* 113, *T* 80
 - for lists, *R* 177
- structure constant, *R* 742
- StructureConstantsTable, *R* 600
- StructureDescription, *R* 350
- Structure Descriptions, *R* 350
- StructWithGenerators, *R* 284
- SU, *R* 510
- Subalgebra, *R* 615
- SubAlgebraModule, *R* 631
- SubalgebraNC, *R* 615
- Subalgebras, *R* 615

- SubalgebraWithOne, R 615
- SubalgebraWithOneNC, R 616
- SubdirectProduct, R 503
- Subdirect Products, *R 503*
- SubdirectProducts, R 503
- Subdomains, *T 71*
- subdomains, R 287
- Subfield, R 575
- SubfieldNC, R 575
- Subfields, R 575
- Subfields of Fields, *R 575*
- Subgroup, R 347
- SubgroupByPcgs, R 437
- SubgroupByProperty, R 348
- subgroup fusions, R 800
- subgroup generators tree, R 495
- Subgroup Lattice, *R 370*
- SubgroupNC, R 347
- SubgroupOfWholeGroupByCosetTable, R 466
- SubgroupOfWholeGroupByQuotientSubgroup, R 472
- Subgroup Presentations, *R 480*
- SubgroupProperty, R 422
- Subgroups, Subgroups, as Stabilizers, *T 50*
- Subgroups, *R 347*
- subgroups, polyhedral, R 741
- Subgroups characterized by prime powers, *R 361*
- Subgroup Series, *R 365*
- SubgroupShell, R 348
- Subgroups of Polycyclic Groups - Canonical Pcgs, *R 437*
- Subgroups of Polycyclic Groups - Induced Pcgs, *R 436*
- SubgroupsSolvableGroup, R 373
- sublist, R 171
 - access, R 171
 - assignment, R 173
 - operation, R 172
- sublist assignment, operation, R 174
- Submagma, R 316
- SubmagmaNC, R 316
- SubmagmaWithInverses, R 316
- SubmagmaWithInversesNC, R 316
- SubmagmaWithOne, R 316
- SubmagmaWithOneNC, R 316
- Submodule, R 570
- SubmoduleNC, R 570
- Submodules, *R 570*
- Submonoid, R 541
- SubmonoidNC, R 541
- SubnearAdditiveGroup, R 555
- SubnearAdditiveGroupNC, R 555
- SubnearAdditiveMagma, R 555
- SubnearAdditiveMagmaNC, R 555
- SubnearAdditiveMagmaWithZero, R 555
- SubnearAdditiveMagmaWithZeroNC, R 555
- SubnormalSeries, R 365
- Subring, R 558
- SubringNC, R 558
- SubringWithOne, R 562
- SubringWithOneNC, R 562
- Subroutines for the Construction of Class Fusions, *R 815*
- Subroutines for the Construction of Power Maps, *R 813*
- subsection mark-up, E 16
- Subsemigroup, R 534
- SubsemigroupNC, R 534
- subsets, R 146
- subset test, for collections, R 270
- Subsomething, *T 71*
- SubsomethingNC, *T 71*
- Subspace, R 594
- SubspaceNC, R 594
- Subspaces, R 596
- SubstitutedWord, R 331
- SubsTom, R 704
- Substruct, R 287
- SubstructNC, R 287
- SubSyllables, R 332
- subtract, a set from another, R 194
- SubtractBlist, R 208
- subtraction, R 48
 - matrices, R 219
 - matrix and scalar, R 219
 - rational functions, R 666
 - scalar and matrix, R 219
 - scalar and matrix list, R 221
 - scalar and vector, R 211
 - vector and scalar, R 211
 - vectors, R 211
- SubtractSet, R 194
- Subword, R 330
- Successors, R 311
- Suitability for Compilation, *R 36*
- Sum, R 200

- Sum and Intersection of Pcgs, *R 442*
- SumFactorizationFunctionPcgs, *R 442*
- SumIntersectionMat, *R 229*
- SumX, *R 202*
- SupersolvableResiduum, *R 360*
- support, email address, *R 832*, *T 16*
- SupportedCharacterTableInfo, *R 724*
- Suppressing Indexing and Labelling of a Section and Resolving Label Clashes, *E 15*
- SurjectiveActionHomomorphismAttr, *R 406*
- SuzukiGroup, *R 508*
- SylowComplement, *R 360*
- SylowSubgroup, *R 360*
- Sylow Subgroups and Hall Subgroups, *R 360*
- SylowSystem, *R 361*
- Symbols, *R 40*
- Symmetric and Alternating Groups, *R 412*
- SymmetricClosureBinaryRelation, *R 312*
- SymmetricGroup, *R 508*
- symmetric group, powermap, *R 152*
- SymmetricParentGroup, *R 413*
- SymmetricParts, *R 784*
- SymmetricPowerOfAlgebraModule, *R 656*
- symmetric relation, *R 311*
- Symmetrizations, *R 783*
- symmetrizations, orthogonal, *R 784*
- symplectic, *R 785*
- Symmetrizations of Class Functions, *R 783*
- SymplecticComponents, *R 785*
- SymplecticGroup, *R 510*
- syntax errors, *R 64*
- system getter, *R 120*
- system setter, *R 120*
- Sz, *R 508*
- T**
- t_N , *R 159*
- TableAutomorphisms, *R 758*
- table automorphisms, *R 816*
- TableHasIntKeyFun, *N 11*
- table of chapters for help books, *R 23*
- TableOfMarks, *R 699*
- TableOfMarksByLattice, *R 700*
- TableOfMarksComponents, *R 703*
- TableOfMarksCyclic, *R 718*
- TableOfMarksDihedral, *R 718*
- TableOfMarksFamily, *R 703*
- TableOfMarksFrobenius, *R 718*
- Table of Marks Objects in GAP, *R 699*
- table of sections for help books, *R 23*
- tables, *E 23*, *R 722*
- Tables, Displayed Mathematics and Mathematics Alignments, *E 23*
- tabulator, *R 41*
- Tau, *R 139*
- Technical Details about Tables of Marks, *R 703*
- Technical Details about the Implementation of Magma Rings, *R 662*
- Technical Matters Concerning General Mappings, *R 308*
- TemporaryGlobalVarName, *R 46*
- Tensored, *R 775*
- TensorProductGModule, *R 692*
- TensorProductOfAlgebraModules, *R 655*
- Tensor Products and Exterior and Symmetric Powers, *R 655*
- test, for a primitive root, *R 137*
- for a rational, *R 142*
- for records, *R 257*
- for set equality, *R 193*
- TestConsistencyMaps, *R 809*
- Tester, *R 121*
- tester, *R 121*
- of an attribute, *T 72*
- Test Files, *R 83*
- Test for the Existence of GAP Package Binaries, *E 39*
- TestHomogeneous, *R 819*
- TestInducedFromNormalSubgroup, *R 821*
- Testing Finiteness of Finitely Presented Groups, *R 475*
- Testing for the System Architecture, *R 35*
- Testing Monomiality, *R 821*
- Testing the Examples, *E 24*
- TestJacobi, *R 612*
- TestMonomial, *R 821*
- TestMonomialQuick, *R 822*
- TestMonomialUseLattice, *R 822*
- Test of the installation, *R 828*
- TestPackageAvailability, *R 842*
- TestPerm1, *R 791*
- TestPerm2, *R 791*
- TestPerm3, *R 791*
- TestPerm4, *R 791*
- TestPerm5, *R 791*
- TestQuasiPrimitive, *R 820*

- `TestRelativelySM`, R 823
- Tests for Actions, R 402
- Tests for the Availability of Methods, R 378
- `TestSubnormallyMonomial`, R 823
- TeX Macros, E 16
- TeX Macros for Domains, E 20
- The .gaprc file, R 33
- The Adjoint Representation, R 647
- The Compiler, R 35
- The Defining Attributes of Rational Functions, R 684
- The Dixon-Schneider Algorithm, R 749
- The Documentation, R 830
- The External Representation for Associative Words, R 334
- The family pcgs, R 449
- The Files of a GAP Package, E 35
- The GAP System, T 10
- The GASMAN Interface for Weak Pointer Objects, E 53
- The General Backtrack Algorithm with Ordered Partitions, E 55
- The Help Book Handler, E 43
- The Info Mechanism, T 85
- The Interface between Character Tables and Groups, R 726
- The Interface between Tables of Marks and Character Tables, R 716
- The Library of Tables of Marks, R 719
- The Main File, E 11
- The manual.six File, E 43
- `then`, R 51
- The Natural Action, R 411
- The PackageInfo.g File, E 37
- The Pager Command, R 25
- The Permutation Image of an Action, R 398
- The Representations of Rational Functions, R 683
- The Smash MeatAxe, R 696
- The Syntax in BNF, R 59
- The WWW Homepage of a Package, E 37
- `ThreeGroup` library, R 516
- Tietze Options, R 498
- Tietze Transformations, R 485
- Tietze Transformations that introduce new Generators, R 490
- `TietzeWordAbstractWord`, R 483
- `time`, R 81
- Timing, R 80
- Todd-Coxeter Procedure, R 549
- `Trace`, R 222
 - for field elements, R 577
 - of a matrix, R 222
- `TracedCosetFpGroup`, R 463
- `TraceImmediateMethods`, R 78
- `TraceMat`, R 222
- `TraceMethods`, R 78, T 75
- `TracePolynomial`, R 576
- Tracing generator images through Tietze transformations, R 493
- Tracing Methods, R 78
- `TransferDiagram`, R 809
- `Transformation`, R 550
- `TransformationData`, R 550
- `TransformationFamily`, R 550
- `TransformationNC`, R 550
- `TransformationRelation`, R 552
- `TransformationType`, R 550
- `TransformingPermutations`, R 759
- `TransformingPermutationsCharacterTables`, R 759
- transitive, R 402
- `TransitiveClosureBinaryRelation`, R 312
- `TransitiveGroup`, R 514
- `TransitiveIdentification`, R 514
- Transitive Permutation Groups, R 514
- transitive relation, R 311
- `Transitivity`, for characters, R 774
 - for class functions, R 774
 - for group actions, R 402
- `TranslatorSubalgebra`, R 634
- transporter, R 398
- `TransposedMat`, R 223
- `TransposedMatAttr`, R 223
- `TransposedMatDestructive`, R 224
- `TransposedMatImmutable`, R 223
- `TransposedMatMutable`, R 223
- `TransposedMatOp`, R 223
- `TransposedMatrixGroup`, R 425
- `Transversal`, N 19
- `TransversalBySiftFunction`, N 18
- `TransversalByTrivial`, N 18
- `TransversalElt`, N 16
- `TransversalOfChainSubgroup`, N 20
- Transversals, R 353
- Transversals by direct products, N 18
- Transversals by homomorphic images, N 17

Transversals by Schreier tree, *N* 16
 Transversals by sift functions, *N* 18
 Transversals by Trivial subgroups, *N* 18
 Triangular Matrices, *R* 230
 TriangulizedIntegerMat, *R* 237
 TriangulizedIntegerMatTransform, *R* 237
 TriangulizedNullspaceMat, *R* 225
 TriangulizedNullspaceMatDestructive, *R* 225
 TriangulizeIntegerMat, *R* 237
 TriangulizeMat, *R* 225
 Trivial chain subgroups and sift function chain subgroups, *N* 21
 TrivialCharacter, *R* 770
 TrivialGroup, *R* 506
 TrivialIterator, *R* 275
 TrivialSubalgebra, *R* 616
 TrivialSubgroup, *R* 358
 TrivialSubmagmaWithOne, *R* 320
 TrivialSubmodule, *R* 570
 TrivialSubmonoid, *R* 541
 TrivialSubnearAdditiveMagmaWithZero, *R* 555
 TrivialSubspace, *R* 595
 TryCosetTableInWholeGroup, *R* 466
 TryGcdCancelExtRepPolynomials, *R* 686
 TryNextMethod, *P* 13, *T* 74
 Tuples, *R* 148
 tuple stabilizer, *R* 397
 TwoClosure, *R* 422
 TwoCoboundaries, *R* 454
 TwoCocycles, *R* 454
 TwoCohomology, *R* 454
 TwoGroup library, *R* 516
 TwoSidedIdeal, *R* 559
 TwoSidedIdealByGenerators, *R* 560
 TwoSidedIdealNC, *R* 560
 TwoSquares, *R* 141
 type, boolean, *R* 166
 cyclotomic, *R* 154
 records, *R* 257
 strings, *R* 245
 TypeObj, *R* 124
 TypeOfDefaultGeneralMapping, *R* 309
 Types, *R* 124
 TzEliminate, *R* 488
 TzFindCyclicJoins, *R* 489
 TzGo, *R* 486
 TzGoGo, *R* 487
 TzImagesOldGens, *R* 494

TzInitGeneratorImages, *R* 493
 TzNewGenerator, *R* 485
 TzOptions, *R* 498
 TzPreImagesNewGens, *R* 494
 TzPrint, *R* 484
 TzPrintGeneratorImages, *R* 494
 TzPrintGenerators, *R* 483
 TzPrintLengths, *R* 484
 TzPrintOptions, *R* 499
 TzPrintPairs, *R* 484
 TzPrintPresentation, *R* 484
 TzPrintRelators, *R* 483
 TzPrintStatus, *R* 484
 TzSearch, *R* 488
 TzSearchEqual, *R* 489
 TzSort, *R* 477
 TzSubstitute, *R* 490
 TzSubstituteCyclicJoins, *R* 493

U

u_N , *R* 159
 UglyVector, *R* 608
 Umlauts, *E* 26
 Unbind, *R* 44
 for lists, *R* 175
 UnbindElmWPObj, *E* 52
 UnbindGlobal, *R* 45
 UnderlyingCharacteristic, *R* 733
 UnderlyingCharacterTable, *R* 764
 UnderlyingElement, fp group elements, *R* 461
 fp semigroup elements, *R* 547
 UnderlyingElementOfReesMatrixSemigroup-
 Element, *R* 540
 UnderlyingElementOfReesZeroMatrixSemigroup-
 Element, *R* 540
 UnderlyingExternalSet, *R* 406
 UnderlyingFamily, *R* 636
 UnderlyingGeneralMapping, *R* 302
 UnderlyingGroup, for character tables, *R* 726
 for tables of marks, *R* 705
 UnderlyingLeftModule, *R* 598
 UnderlyingLieAlgebra, *R* 642
 UnderlyingMagma, *R* 659
 UnderlyingRelation, *R* 302
 Undocumented Variables, *E* 33
 UnInstallCharReadHookFunc, *R* 106
 Union, *R* 271
 union, of collections, *R* 271

- of sets, R 193
- Union2, R 271
- UnionBlist, R 207
- Unique, R 195
- UniteBlist, R 208
- UniteBlistList, R 208
- UniteSet, R 193
- Units, R 563
- Units and Factorizations, *R 563*
- UnivariateTestRationalFunction, R 670
- UnivariatePolynomial, R 669
- UnivariatePolynomialByCoefficients, R 669
- UnivariatePolynomialRing, R 678
- Univariate Polynomial Rings, *R 678*
- Univariate Polynomials, *R 669*
- UnivariateRationalFunctionByCoefficients, R 675
- Univariate Rational Functions, *R 675*
- UniversalEnvelopingAlgebra, R 648
- Universal Enveloping Algebras, *R 648*
- UNIX, features, R 27
 - options, R 27
- UNIXSelect, R 97
- Unknown, R 164
- UnloadSmallGroupsData, R 517
- UnorderedTuples, R 147
- Unpacking, *R 826*
- UnprofileFunctions, R 82
- UnprofileMethods, R 82
- until, R 52
- UntraceMethods, R 78
- UpdateMap, R 807
- UpEnv, R 71
- UpperCentralSeriesOfGroup, R 367
- UpperSubdiagonal, R 230
- Usage of the Percent Symbol, *E 24*
- UseBasis, R 572
- UseFactorRelation, R 293
- Useful Categories for all Elements of a Family, *R 297*
- Useful Categories of Elements, *R 295*
- UseIsomorphismRelation, R 293
- User Streams, *R 103*
- UseSubsetRelation, R 293
- Using buildman.pe, *E 27*
- utilities for editing GAP files, R 75

V

- V, (global) Variable mark-up, E 16

- v_N , R 159
- Valuation, R 689
- Value, R 672
- ValueCochain, R 651
- ValueGlobal, R 45
- ValueMolienSeries, R 787
- ValueOption, R 88
- ValuePol, R 216
- ValuesOfClassFunction, R 764
- Variable Access in a Break Loop, *R 71*
- Variables, *R 43*
- variables, T 22
- vectors, row, T 36
- Vectors and Matrices, *T 36*
- Vectors as coefficients of polynomials, *R 215*
- VectorSpace, R 594
- VectorSpaceByPcgsOfElementaryAbelianGroup, R 445
- Vector Space Homomorphisms, *R 605*
- Vector Spaces, *T 59*
- Vector Spaces Handled By Nice Bases, *R 607*
- verbatim environments, E 22
- Version Numbers, *E 40*
- vi, R 75
- View, R 65
- View and Print, *R 65*
- ViewObj, R 66
 - for character tables, R 742
 - for class functions, R 768
 - for tables of marks, R 701
- vim, R 75
- VirtualCharacter, R 769
- virtual character, R 771
- virtual characters, R 762

W

- w_N , R 159
- WeakPointerObj, E 51
- WeakPointerObj, *E 51*
- Weak Pointer Objects, *E 51*
- web sites, for GAP, T 16
- WedgeGModule, R 692
- WeekDay, R 255
- WeightLexOrdering, R 279
- WeightOfGenerators, R 280
- WeightsTom, R 707
- WeightVecFFE, R 215
- WeylGroup, R 644

WeylOrbitIterator, R 645
 Where, R 70, T 86
 While, R 52
 while loop, R 52
 whitespace, T 19
 Whitespaces, R 41
 Why Class Functions?, R 762
 Why Proceed in a Different Way?, P 45
 WordAlp, R 250
 words, in generators, R 349
 Working with large degree permutation groups,
 R 423
 Wrapping Up a GAP Package, E 41
 WreathProduct, R 503
 wreath product embedding, R 504
 WreathProductImprimitiveAction, R 504
 WreathProductOrdering, R 281
 WreathProductProductAction, R 504
 Wreath Products, R 503
 WriteAll, R 100
 WriteByte, R 100
 WriteLine, R 100
 Writing Documentation, E 36
 Writing Functions, T 40

X

x, T 79

x_N , R 159

Y

y_N , R 159

Z

Z, R 579
 ZClassRepsQClass, R 429
 Zero, R 289
 ZeroAttr, R 289
 ZeroCoefficient, R 660
 ZeroCoefficientRatFun, R 684
 ZeroImmutable, R 289
 ZeroMapping, R 301
 ZeroMutable, R 289
 ZeroOp, R 289
 ZeroSameMutability, R 289
 ZeroSM, R 289
 ZippedProduct, R 686
 ZippedSum, R 686
 ZmodnZ, R 134
 ZmodnZObj, R 134
 ZmodpZ, R 134
 ZmodpZNC, R 134
 zoo, E 41
 ZumbroichBase, R 590
 Zuppos, R 372