

General symbols

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| \mathbb{C} | field of complex numbers |
| \mathbb{F}_q | finite field with q elements |
| i | primitive square root of one in \mathbb{C} |
| Id_M | identity map on the set M |
| $\text{Im}(f)$ | image of the map f |
| $\ker(\varphi)$ | kernel of the morphism φ |
| \mathbb{N} | the natural numbers without 0 |
| \mathbb{N}_0 | the natural numbers with 0 |
| \mathbb{P} | the prime numbers in \mathbb{Z} |
| \mathbb{Q} | field of rational numbers |
| \mathbb{R} | field of real numbers |
| \mathbb{Z} | ring of integer numbers |
| $\mathbb{Z}_{\geq a}, \mathbb{Z}_{> a}, \mathbb{Z}_{\leq a}, \mathbb{Z}_{< a}$ | $\{m \in \mathbb{Z} \mid m \geq a \text{ (resp. } m > a, m \leq a, m < a)\}$ |
| $ X $ | cardinality of the set X |
| δ_{ij} | Kronecker's delta |
| \cup | union |
| \amalg | disjoint union |
| \cap | intersection |
| \sum | summation symbol |
| \prod, \times | cartesian product |
| \oplus | direct sum |
| \otimes | tensor product |
| \emptyset | empty set |
| \forall | for all |
| \exists | there exists |
| \cong | isomorphism |
| \bar{a} | complex conjugate of $a \in \mathbb{C}$ |
| $a \mid b, a \nmid b$ | a divides b , a does not divide b |
| $f _S$ | restriction of the map f to the subset S |

Group theory

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|-------------------|--|
| A_n | alternating group on n letters |
| C_m | cyclic group of order m in multiplicative notation |
| $C_G(x)$ | centraliser of x in G |
| $C(G)$ | set of conjugacy classes of G |
| D_{2n} | dihedral group of order $2n$ |
| $\text{Fix}_X(g)$ | set of fixed points of g on X |

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| $[G, G]$ or G' | commutator subgroup of G |
| G/N | quotient group G modulo N |
| $GL_n(K)$ | general linear group over K |
| $H \leq G, H < G$ | H is a subgroup of G , resp. a proper subgroup |
| $N \trianglelefteq G$ | N is a normal subgroup G |
| $N_G(H)$ | normaliser of H in G |
| $PGL_n(K)$ | projective linear group over K |
| Q_8 | quaternion group of order 8 |
| S_n | symmetric group on n letters |
| $SL_n(K)$ | special linear group over K |
| $Syl_p(G)$ | set of Sylow p -subgroups of the group G |
| $Z(G)$ | centre of the group G |
| $\mathbb{Z}/m\mathbb{Z}$ | cyclic group of order m in additive notation |
| $ G $ | order of the group G |
| $ G : H $ | index of H in G |
| $[x]$ | conjugacy class of x |
| $[g, h]$ | commutator of g and h |
| $\langle g \rangle$ | cyclic group generated by g |
| $\langle g \mid g^m = 1 \rangle$ | cyclic group of order m generated by g |

Rings and linear algebra

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| $R[X]$ | ring of polynomials in an indeterminate X over the ring R |
| R^\times | group of units of the ring R |
| $\text{char}(K)$ | characteristic of the field K |
| \det | determinant of a matrix/linear transformation |
| \dim_K | K -dimension |
| $\text{End}_K(V)$ | endomorphism ring of the K -vector space V |
| $GL(V)$ | set of invertible linear transformations of the vector space V |
| $\langle x_1, \dots, x_n \rangle_K$ | K -linear span of the set $\{x_1, \dots, x_n\}$ |
| $M_{n \times m}(K)$ | ring of $n \times m$ -matrices with coefficients in K |
| $M_n(K)$ | ring of $n \times n$ -matrices with coefficients in K |
| \overline{K} | algebraic closure of the field K |
| Tr | trace of a matrix/linear transformation |
| $W \leq V$ | W is a K -subspace of V |
| $\{e_1, \dots, e_n\}$ | a basis of K^n |
| (e_1, \dots, e_n) | an ordered basis of K^n |

Representations and characters

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| C_1, \dots, C_r | the conjugacy classes of G |
| $\widehat{C}_1, \dots, \widehat{C}_r$ | the class sums of G |
| $\mathcal{C}l(G)$ | \mathbb{C} -vector space of class functions on G |
| $I_G(\psi)$ | inertia group of ψ in G |
| $\text{Inf}_{G/N}^G$ | inflation from G/N to G |
| $\text{Ind}_H^G, \uparrow_H^G$ | induction from H to G |
| $\text{Irr}(G) = \{\chi_1, \dots, \chi_r\}$ | set of irreducible characters |
| $\text{Irr}(G \psi)$ | set of irreducible characters |



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| $\ker(\chi)$ | kernel of the characters of χ |
| $\mathcal{F}(G, K)$ | space of K -valued functions of G |
| KG | group algebra of G over the field K |
| $\text{Res}_{H, \downarrow}^G$ | restriction from G to H |
| $Z(KG)$ | center of KG |
| $Z(\chi)$ | center of the character χ |
| $\rho \sim \rho'$ | ρ is equivalent to ρ' |
| ρ_{reg} | the regular representation of G |
| ρ_V | representation associated to the G -vector space V |
| χ_{reg} | regular character of G |
| χ_V | character of the G -vector space V |
| $\omega_1, \dots, \omega_r$ | the central characters of G |
| $\langle -, - \rangle_G$ | scalar product on $\mathcal{C}l(G)$ |
| 1_G | the trivial character of G |

Greek Alphabet

| lower-case letter | upper-case letter | name |
|-------------------------|-------------------|---------|
| α | A | alpha |
| β | B | beta |
| γ | Γ | gamma |
| δ | Δ | delta |
| ε, ϵ | E | epsilon |
| ζ | Z | zeta |
| η | H | eta |
| θ | Θ | theta |
| ι | I | iota |
| κ | K | kappa |
| λ | Λ | lambda |
| μ | M | mu |
| ν | N | nu |
| ξ | Ξ | xi |
| \omicron | O | omicron |
| π, ϖ | Π | pi |
| ρ, ϱ | P | rho |
| σ, ς | Σ | sigma |
| τ | Υ | tau |
| υ | Υ | upsilon |
| ϕ, φ | Φ | phi |
| χ | X | chi |
| ψ | Ψ | psi |
| ω | Ω | omega |