General symbols

$\mathbb{C}$	field of complex numbers
$\mathbb{F}_q$	finite field with q elements
i	$\sqrt{-1}$ in $\mathbb{C}$
Id_M	identity map on the set M
$\mathrm{Im}(f)$	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
$\mathbb{Z}_{\geqslant a}, \mathbb{Z}_{>a}, \mathbb{Z}_{\leqslant a}, \mathbb{Z}_{<a}$	$\{m \in \mathbb{Z} \mid m \geqslant a \ (\text{resp. } m > a, m \geqslant a, m < a)\}$
$\lvert X \rvert$	cardinality of the set X
δ_{ij}	Kronecker's delta
$\bigcup$	union
$\bigsqcup$	disjoint union
$\bigcap$	intersection
$\sum$	summation symbol
$\prod, \times$	cartesian product
$\oplus$	direct sum
$\otimes$	tensor product
$\varnothing$	empty set
$\forall$	for all
$\exists$	there exists
$\cong$	isomorphism
$\overline{a}$	complex conjugate of $a \in \mathbb{C}$
$a \mid b$, $a \nmid b$	a divides b, a does not divide b
$f\rvert_S$	restriction of the map f to the subset S

Group theory

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 $2n$
$\mathrm{Fix}_X(g)$	set of fixed points of g on X

$[G, G]$ or G'	commutator subgroup of G
G/N	quotient group G modulo N
$\mathrm{GL}_n(K)$	general linear group over K
$H \leqslant G$, $H < G$	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
$\mathrm{PGL}_n(K)$	projective linear group over K
Q_8	quaternion group of order 8
S_n	symmetric group on n letters
$\mathrm{SL}_n(K)$	special linear group over K
$\mathrm{Syl}_p(G)$	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

$R[X]$	ring of polynomials in an indeterminate X over the ring R
$R^\times$	group of units of the ring R
$\mathrm{char}(K)$	characteristic of the field K
$\det$	determinant of a matrix/linear transformation
$\dim_K$	K-dimension
$\mathrm{End}_K(V)$	endomorphism ring of the K-vector space V
$\mathrm{GL}(V)$	set of invertible linear transformations of the vector space V
$\langle x_1, \cdots, x_n \rangle_K$	K-linear span of the set $\{x_1, \cdots, x_n\}$
$M_{n \times m}(K)$	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
$W \leqslant V$	W is a K-subspace of V
$\{e_1, \cdots, e_n\}$	a basis of K^n
$(e_1, \cdots, e_n)$	an ordered basis of K^n

Representations and characters

$C_1, \ldots, C_r$	the conjugacy classes of G
$\widehat{C_1}, \ldots, \widehat{C_r}$	the class sums of G
$\mathcal{C}l(G)$	$\mathbb{C}$-vector space of class functions on G
$\mathrm{Inf}^G_{G/N}$	inflation from G/N to G
$\mathrm{Ind}^G_H, \uparrow^G_H$	induction from H to G
$\mathrm{Irr}(G) = \{\chi_1, \ldots, \chi_r\}$	set of irreducible characters of G
$\ker(\chi)$	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

$\mathrm{Res}_H^G, \downarrow_H^G$	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 $\mathcal{Cl}(G)$
$\mathbf{1}_G$	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
o	O	omicron
π, ϖ	Π	pi
ρ, ϱ	P	rho
σ, ς	Σ	sigma
τ	T	tau
υ	Υ	upsilon
ϕ, φ	Φ	phi
χ	X	chi
ψ	Ψ	psi
ω	Ω	omega