Index

List of Notations

$a, b, c, \ldots$	as numbers	15
$\mathbf{A}, \mathbf{B}, \ldots, \mathbf{P}, \mathbf{Q}, \ldots, \mathbf{O}, .$	as points	1
	as vectors	15
$\mathbf{O}$	the origin	1
$\vec{\mathbf{P}}, \vec{\mathbf{E}}_i$		1, 10
$\overrightarrow{\mathbf{PQ}}$		1
$\in$	"is an element of"	19
$\subset$	"is contained" or "is a subset of"	19
(a, b)	open interval	28
$[a, b]$	closed interval	28
$S \cap T$	set theoretic intersection	19
$S \cup T$	set theoretic union	19
$\Rightarrow$	"implies"	17
$\lvert S \rvert$		46
$\lvert A \rvert$	length of vector A	
$\langle\ ,\ \rangle$	"inner product"	217
$d(\mathbf{A}, \mathbf{B})$	distance	223
$\mathbf{A} \cdot \mathbf{B}$	dot/scalar product	217
$\mathbf{A}^{-1}$	inverse matrix of $\mathbf{A}$	117
$\mathbf{A}^t$	transpose d matrix of $\mathbf{A}$	123
$\mathbf{A}^{\text{cof}}$	cofactor matrix of $\mathbf{A}$	197
$\mathbf{A}^*$	adjoint of A	248
$\mathbf{A} + \mathscr{V}$	parallel (translation) of $\mathscr{V}$	162
A_{ij}	cofactor	196
a_{ij}		62
(a_{ij})		100
$\mathbb{C}$	the set of all complex numbers	19, 27
$\mathbb{C}^k$	the complex Cartesian space	19
$\mathscr{E}(a, b)$		28
det $\mathbf{C}$	the determinant of the matrix C	174
D	differentiation operator	71

$\triangle(t)$	characteristic polynomial	199
dim	dimension of	46
$\mathbf{E}_i$		82
E_{rs}		108
$\mathscr{F}(S)$	the set of all real valued functions defined on S	30
$\mathscr{F}(S,T)$		31
$\mathscr{F}_C(S)$		31
$g\|_T$		77
I	the identity transformation	78
I	the identity matrix	114
Im T	The image of T	69
ker T	the kernel of T	69
$\mathscr{L}(\ )$	the linear span of	21, 22
$\mathsf{I}_{k(x)}$		97
L	integration operator	71
$M_{k(x)}$	multiplication operator by $k(x)$	97
$\mathfrak{M}\ mn$	The set of all $m \times n$ matrices	108
$\mathscr{P}(\mathbb{R})$	the set of all polynomials	27
$\mathscr{P}_n(\mathbb{R})$	the set of all polynomials of degree $\leqslant n$	26
R	the real numbers	16
$\mathbb{R}^k$	the real Cartesian space	16
$\mathbb{R}_T$		78
γ	the solution space	162
S	the shift operator	84
T_A		247
$tr(\mathbf{A})$	trace of $\mathbf{A}$	220
T(U)		66
T_φ		83
$\mathsf{T}\|_{\mathscr{W}}$		273
$\mathscr{V}_e$		190
$\mathscr{V}_{xy}$	the x-y plane	69
$\mathscr{W}^\perp$	the orthogonal complement of	237
$\mathscr{X}_s$	the characteristic function of s	35
$\varnothing$	the empty set	91
$\mathscr{V}, \mathscr{W}, \mathscr{U}, \mathscr{L}, \mathscr{T}$	vector spaces	20
T, S, ...	Linear transformations	63