

SHORTHAND

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1. SHORTHAND

The following are conventional shorthand notations which will be helpful in math and possible science.

- (a) \forall for all
- (b) \exists there exists
- (c) \neg not
- (d) Δ change
- (e) \ni such that
- (f) $!$ unique
- (g) \implies implies
- (h) \iff if and only if (equivalent)
- (i) \mathbb{R} the real numbers
- (j) \mathbb{Q} the rational numbers
- (k) \mathbb{Z} the integer numbers
- (l) \mathbb{N} the natural numbers
- (m) \mathbb{C} the complex numbers
- (n) \rightarrow approaches, Ex: $x \rightarrow a$ is x approaches a
- (o) $\sum_{k=0}^n a_k$ is the sum members of sequence (a_k) from $k = 0$ to $k = n$

2. SET NOTATION

The following symbols are set notations that may decrease the length of your solutions.

- (a) \in element of (in a set)
- (b) \subset subset of
- (c) \subseteq subset of, may be equal to
- (d) \cup union
- (e) \cap intersection
- (f) \setminus set minus, Ex: $\mathbb{R} \setminus \{2\}$ means all real numbers except 2
- (g) $\{x\}$ the set containing x
- (h) $(a, b) = \{x \in \mathbb{R} \mid a < x < b\}$
- (i) $[a, b] = \{x \in \mathbb{R} \mid a \leq x \leq b\}$
- (j) $(a, b] = \{x \in \mathbb{R} \mid a < x \leq b\}$
- (k) $f : D \rightarrow R$ is the function with domain D and range R .

3. GREEK LETTERS

(a)	Γ	GAMMA
(b)	Δ	DELTA
(c)	Λ	LAMBDA
(d)	Ξ	XI
(e)	Π	PI
(f)	Σ	SIGMA
(g)	Υ	UPSILON
(h)	Ψ	PSI
(i)	Ω	OMEGA
(j)	α	alpha
(k)	β	beta
(l)	γ	gamma
(m)	δ	delta
(n)	ϵ	epsilon
(o)	ζ	zeta
(p)	η	eta
(q)	θ	theta
(r)	ι	iota
(s)	κ	kappa
(t)	λ	lambda
(u)	μ	mu
(v)	ν	nu
(w)	ξ	xi
(x)	π	pi
(y)	ρ	rho
(z)	σ	sigma
(aa)	τ	tau
(bb)	υ	upsilon
(cc)	ϕ	phi
(dd)	φ	varphi
(ee)	χ	chi
(ff)	ψ	psi
(gg)	ω	omega

I shall add more later as we get further along

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