1.1 Notation and Terminology

The following is a summary of commonly used symbols and terminology.

QUANTIFIERS
$\forall$ – for all
$\exists$ – there exists

TERMINOLOGY
Theorem (or Proposition) – a proven mathematical statement
this is usually of the form *if such and such then so and so*
the Hypothesis is *such and such*
the Conclusion is *so and so*
Lemma – a little theorem.
Corollary – a mathematical statement which follows from a previous theorem.

SETS
$\mathbb{N}$ – natural numbers $\{1, 2, 3, \dots\}$
$\mathbb{Z}$ – integers $\{\dots, -3, -2, -1, 0, 1, 2, 3, \dots\}$
$\mathbb{Q}$ – rational numbers e.g. $1, \frac{1}{2}, -\frac{1}{3}$ etc.
$\mathbb{R}$ – real numbers
(rational numbers and irrational numbers e.g. $\pi = 3.14159\dots, \sqrt{2} = 1.41421\dots$)
$\mathbb{C}$ – complex numbers $a + ib$ where a, b are real and $i = \sqrt{-1}$
$\emptyset$ – the empty set $\{\}$
$\in$ – is a member of (is in e.g. $-1 \in \mathbb{Z}$, $\sqrt{2} \in \mathbb{R}$)
$\notin$ – is not a member of (is in e.g. $-1 \notin \mathbb{N}$, $\sqrt{2} \notin \mathbb{Q}$)
$\cup$ – union (things that are in either or both of the sets)
$\cap$ – intersection (things that are in both sets)
$\subseteq$ – is a subset of subset (is contained in, meaning one set is inside another)
$\subsetneq$ – is a subset of proper subset (is strictly contained in, meaning the sets are not equal)

1.2 Greek letters

In this module and throughout mathematics you will encounter numerous Greek letters. Here is a table so that you know what they all are and how they are called.

A	B	Γ	Δ	E	Z
α	β	γ	δ	ϵ or ε	ζ
Alpha	Beta	Gamma	Delta	Epsilon	Zeta
H	Θ	I	K	Λ	M
η	θ	ι	κ	λ	μ
Eta	Theta	Iota	Kappa	Lambda	Mu
N	Ξ	O	Π	P	Σ
ν	ξ	o	π	ρ	σ
Nu	Xi	Omicron	Pi	Rho	Sigma
T	Y	Φ	X	Ψ	Ω
τ	υ	ϕ or φ	χ	ψ	ω
Tau	Upsilon	Phi	Chi	Psi	Omega