MA1014 4/10/21

1.1 Sets & 1.2 Numba systems

Def: A set is a collection of element

$\in$ element of $\quad$ $\exists$ there is/exists

$\notin$ not an element of $\quad$ $\forall$ for all

Defining sets:

e.g $\{x \in \mathbb{Z} : x^2 < 19\} = \{-4, -3, -2, -1, 0, 1, 2, 3, 4\}$

$\mathbb{N} = \{0, 1, 2, 3, 4, \ldots\}$

$\mathbb{Z} = \{\ldots, -3, -2, -1, 0, 1, 2, 3, \ldots\}$

$\mathbb{R}$ $\quad \pi \in \mathbb{R}$, $e \in \mathbb{R}$

$\mathbb{Q}$ $\quad \frac{7}{13} \in \mathbb{Q}$

$\emptyset$ empty set or $\{\}$

Intervals

- closed $[\,]$ $[a,b] = \{x \in \mathbb{R} : a \leq x \leq b\}$
- open $(\,)$ $(a,b) = \{x \in \mathbb{R} : a < x < b\}$

Relatives and Operations

$A \cap B$ "in A and in B"

$A \cup B$ "in A or in B"

A^c "not in A"

$B \setminus A$ "in B but not in A"