

## Definitions

| Term                      | Notation                                                                            | Example(s) | We say in English ...                                                                                                                                                                                                                 |
|---------------------------|-------------------------------------------------------------------------------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| sequence                  | $x_1, \dots, x_n$                                                                   |            | A sequence $x_1$ to $x_n$                                                                                                                                                                                                             |
| summation                 | $\sum_{i=1}^n x_i$ or $\sum_{i=1}^n x_i$                                            |            | The sum of the terms of the sequence $x_1$ to $x_n$                                                                                                                                                                                   |
| all reals                 | $\mathbb{R}$                                                                        |            | The (set of all) real numbers (numbers on the number line)                                                                                                                                                                            |
| all integers              | $\mathbb{Z}$                                                                        |            | The (set of all) integers (whole numbers including negatives, zero, and positives)                                                                                                                                                    |
| all positive integers     | $\mathbb{Z}^+$                                                                      |            | The (set of all) strictly positive integers                                                                                                                                                                                           |
| all natural numbers       | $\mathbb{N}$                                                                        |            | The (set of all) natural numbers. <b>Note:</b> we use the convention that 0 is a natural number.                                                                                                                                      |
| piecewise rule definition | $f(x) = \begin{cases} x & \text{if } x \geq 0 \\ -x & \text{if } x < 0 \end{cases}$ |            | Define $f$ of $x$ to be $x$ when $x$ is nonnegative and to be $-x$ when $x$ is negative                                                                                                                                               |
| function application      | $f(7)$<br>$f(z)$<br>$f(g(z))$                                                       |            | $f$ of 7 <b>or</b> $f$ applied to 7 <b>or</b> the image of 7 under $f$<br>$f$ of $z$ <b>or</b> $f$ applied to $z$ <b>or</b> the image of $z$ under $f$<br>$f$ of $g$ of $z$ <b>or</b> $f$ applied to the result of $g$ applied to $z$ |
| absolute value            | $ -3 $                                                                              |            | The absolute value of $-3$                                                                                                                                                                                                            |
| square root               | $\sqrt{9}$                                                                          |            | The non-negative square root of 9                                                                                                                                                                                                     |