# Definitions

| Term | Notation Example(s) | We say in English ... |
|---|---|---|
| sequence | $x_1, \ldots, x_n$ | A sequence $x_1$ to $x_n$ |
| | $x_1, \ldots, x_n$ where $n = 0$ | An empty sequence |
| | $x_1, \ldots, x_n$ where $n = 1$ | A sequence containing just $x_1$ |
| | $x_1, \ldots, x_n$ where $n = 2$ | A sequence containing just $x_1$ and $x_2$ in order |
| | $x_1, x_2$ | A sequence containing just $x_1$ and $x_2$ in order |
| 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. **Note**: we use the convention that 0 is a natural number. |
| function rule definition | $f(x) = x + 4$ | Define $f$ of $x$ to be $x + 4$ |
| 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 | $f(7)$ | $f$ of 7 **or** $f$ applied to 7 **or** the image of 7 under $f$ |
| | $f(z)$ | $f$ of $z$ **or** $f$ applied to $z$ **or** the image of $z$ under $f$ |
| | $f(g(z))$ | $f$ of $g$ of $z$ **or** $f$ applied to the result of $g$ applied to $z$ |
| absolute value | $\lvert -3 \rvert$ | The absolute value of $-3$ |
| square root | $\sqrt{9}$ | The non-negative square root of 9 |