

Definitions set prereqs

Term	Notation	Example(s)	We say in English ...
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. Note: we use the convention that 0 is a natural number.

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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
piecewise definition	rule	$f(x) = \begin{cases} \text{rule 1 for } x & \text{when COND 1} \\ \text{rule 2 for } x & \text{when COND 2} \end{cases}$	Define f of x to be the result of applying rule 1 to x when condition COND 1 is true and the result of applying rule 2 to x when condition COND 2 is true. This can be generalized to having more than two conditions (or cases).
function application		$f(7)$ $f(z)$ $f(g(z))$	f of 7 or f applied to 7 or the image of 7 under f f of z or f applied to z or the image of z under f f of g of z or 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

Pro-tip: the meaning of two vertical lines $| \quad |$ depends on the data-types of what's between the lines. For example, when placed around a number, the two vertical lines represent absolute value. We've seen a single vertical line $|$ used as part of set builder definitions to represent "such that". Again, this is (one of the many reasons) why it is very important to declare the data-type of variables before we use them.