Is an element of

$\in$

Used to show the set of numbers to which x can belong

Natural Numbers

$\mathbb{N}$

The set of positive integers
{1, 2, 3, …}

Integers

$\mathbb{Z}$

The set of integers (positive and negative, including zero)
{0, ±1, ±2, …}

Rational Numbers

$\mathbb{Q}$

A number that is rational can be expressed as a fraction $\frac{a}{b}$

Real Numbers

$\mathbb{R}$

The set of all real numbers, positive and negative, rational and irrational

Identity

$\equiv$

Used to show two expressions which are identical, ie equal for all values of x

Approximately

$\approx$

Used to show two expressions or values which are approximately equal

Function

$f(x)$

A relation between a set of values for x and their output values

Logarithm

$$log_a x$$

The logarithm to the base a of x

Modulus

$$|x|$$

The modulus of x. The absolute value. (The positive value of x, ignore any negative sign)

Composite function

$$fg(x)$$

The effect of applying function g following by function f

Therefore

$$\therefore$$

Abbreviation often used in proofs

Exponential function

$$e^x$$

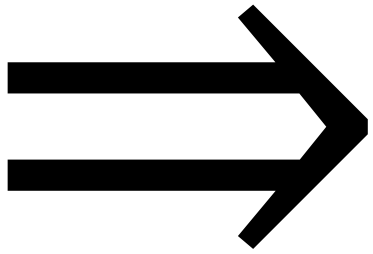
The exponential function of x

Natural logarithm

$$\ln x$$

The natural logarithm of x
(logarithm to the base e of x)

This implies



Abbreviation often used in proofs

Sigma

$$\sum_{i=1}^{n} a_i$$

The sum of $a_1 + a_2 + \cdots + a_n$

Integral

$$\int_a^b f(x)\,dx$$

The integral of f(x) between the limits a and b.
Integration is the inverse of differentiation and is the area under the curve.

Double Differentiate

$$\frac{d^2y}{dx^2}$$

The expression y had been differentiated with respect to x twice (to find the nature of the turning point)

Factorial

$$n!$$

1 x 2 x 3 x … x (n – 1) x n

Binomial Coefficient

$$\binom{n}{r}$$

The value of $\frac{n!}{r!(n-r)!}$

Differentiate

$$\frac{dy}{dx}$$

The expression y had been differentiated with respect to x (to give the gradient function)

Inverse Function

$$f^{-1}(x)$$

The inverse function to the function f

The second derivative

$$f''(x)$$

The function f has been differentiated with respect to x twice

The first derivative

$$f'(x)$$

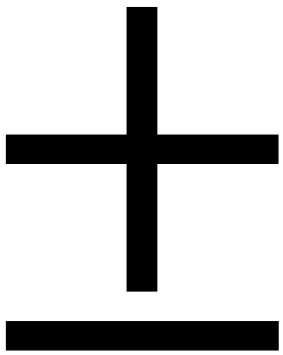
The function f has been differentiated with respect to x

Quod erat demonstrandum

Q.E.D.

Written at the end of a proof.
Meaning “That which was to be proved”

Plus/Minus



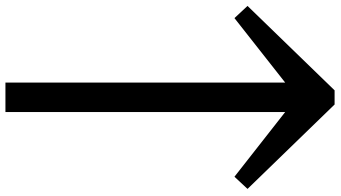
Used to show that an expression can take both a positive value and a negative value.

Infinity

∞

A number greater than any assignable quantity or countable number

Tends towards



Abbreviation used to show the limit an expression reaches