

L<sup>A</sup>T<sub>E</sub>X makes it easy to write equations in a natural way. You can write inline equations like  $A = \pi r^2$  and that works well if the equations don't take up too much vertical space. If you need to write a more complicated equation, use a block like this numbered equation:

$$x(t) = x_0 + v_0 t + \frac{1}{2} a t^2 \quad (1)$$

or this unnumbered equation: (solving for  $t$ )

$$t = \sqrt{\frac{2x}{a}}$$

For most symbols, what you can type on your keyboard will work in L<sup>A</sup>T<sub>E</sub>X, such as  $x < 3$  and  $y > 0$  for less than and greater than.

Other symbols require a backslash, such as these Greek letters:

$$\alpha \dots \beta \dots \gamma \dots \delta$$

You can enter other symbols in a somewhat natural way. At least, the abbreviations make sense after you see them, such as  $x \leq 0$  or  $y \geq 1$  or  $z \neq 2$  for comparing values. Or other symbols like  $x \equiv z$  and  $\pi \approx 3.14$  for defining values in equations.

Engineers and scientists might also enter  $x \rightarrow \infty$  for convergence,  $g = 9.81 \pm 0.01$  to indicate precision, or  $\bar{x} = 4.3$  for a mean. Also consider  $\sum$  for sums,  $\int$  for integrals and  $\partial$  for partial differentiation:

$$\sum_{n=1}^{10} n = 55$$
$$\int e^x dx = e^x + C$$

Be careful when entering trigonometric function names; without a backslash, these will be interpreted as separate symbols, such as:

$$W = F \times d \times \text{cos}(\theta)$$

See how the “cos” name is in *italics*, like it was part of an equation? Instead, use a backslash to “protect” the function name inside the equation:

$$W = F \times d \times \cos(\theta)$$

Do the same for other trigonometric functions like  $\sin(\theta)$   $\cos(\theta)$   $\tan(\theta)$  or  $\arcsin(x)$   $\arccos(x)$   $\arctan(x)$