

The mass-energy equivalence is described by the famous equation

$$E = mc^2$$

discovered in 1905 by Albert Einstein.

In natural units ( $c = 1$ ), the formula expresses the identity

$$E = m \tag{1}$$

Subscripts in math mode are written as  $a_b$  and superscripts are written as  $a^b$ . These can be combined and nested to write expressions such as

$$T_{j_1 j_2 \dots j_q}^{i_1 i_2 \dots i_p} = T(x^{i_1}, \dots, x^{i_p}, e_{j_1}, \dots, e_{j_q})$$

We write integrals using  $\int$  and fractions using  $\frac{a}{b}$ . Limits are placed on integrals using superscripts and subscripts:

$$\int_0^1 \frac{dx}{e^x} = \frac{e-1}{e}$$

Lower case Greek letters are written as  $\omega$   $\delta$  etc. while upper case Greek letters are written as  $\Omega$   $\Delta$ .

Mathematical operators are prefixed with a backslash as  $\sin(\beta)$ ,  $\cos(\alpha)$ ,  $\log(x)$  etc.

## 1 First example

The well-known Pythagorean theorem  $x^2 + y^2 = z^2$  was proved to be invalid for other exponents, meaning the next equation has no integer solutions for  $n > 2$ :

$$x^n + y^n = z^n$$

## 2 Second example

This is a simple math expression  $\sqrt{x^2 + 1}$  inside text. And this is also the same:  $\sqrt{x^2 + 1}$  but by using another command.

This is a simple math expression without numbering

$$\sqrt{x^2 + 1}$$

separated from text.

This is also the same:

$$\sqrt{x^2 + 1}$$

... and this:

$$\sqrt{x^2 + 1}$$