The Pythagorean throrem is $a^2 + b^2 = c^2$.

The Pythagorean throrem is:

$$a^2 + b^= c^2 \tag{1}$$

Equation (1) is called 'Gougu theorem' in Chinese.

It's wrong to say

$$1 + 1 = 3 \tag{dumb}$$

or

$$1 + 1 = 4$$

$$a^2 + b^2 = c^2$$

For short:

$$a^2 + b^2 = c^2$$

Or if you like the long one:

$$a^2 + b^2 = c^2$$

In text: $\lim_{n\to\infty} \sum_{k=1}^{n} \frac{1}{k^2} = \frac{\pi^2}{6}$.
In display:

$$\lim_{n\to\infty} \sum_{k=1}^{n} \frac{1}{k^2} = \frac{\pi^2}{6}$$

$a_1, a_2, \ldots, a_n$
$a_1, a_2, + \cdots + a_n$ $\alpha, \beta, \Gamma, \Delta, \infty, \ldots, \cdots, \vdots, \ddots$
p_{ij}^3 $\qquad m_{\text{Knuth}}$ $\qquad \sum_{k=1}^{3} k$
$a^x + y \neq a^{x+y}$ $\qquad e^{x^2} \neq e^{x}{}^2$
$f(x) = x^2$ $\quad f'(x) =$ $\quad f''^2(x) = 4$
In display style:

$$3/8 \qquad \frac{3}{8} \qquad \tfrac{3}{8}$$

In text style: $1\frac{1}{2}$ hours $\quad 1\dfrac{1}{2}$ hours
$\sqrt{x} \Leftrightarrow x^{1/2} \quad \sqrt[3]{2} \quad \sqrt{x^2+\sqrt{y}}$
Pascal's rule is

$$\binom{n}{k} = \binom{n-1}{k} + \binom{n-1}{k-1}$$

$$\neq, \geq, \leq, \approx, \equiv, \propto, \sim, f_n(x) \stackrel{*}{\approx} 1$$

$$\lim_{x \to 0} \frac{\sin x}{x} = 1$$

$a \bmod b$

$x \equiv a \pmod{b}$

$$\operatorname{argh} 3 = \operatorname*{Nut}_{x=1} 4x$$

In text: $\sum_{i=1}^{n} \quad \int_0^{\frac{\pi}{2}} \quad \oint_0^{\frac{\pi}{2}} \quad \prod_\epsilon$
In display:

$$\sum_{i=1}^{n} \quad \int_0^{\frac{\pi}{2}} \quad \oint_0^{\frac{\pi}{2}} \quad \prod_\epsilon$$

In text: $\sum\limits_{i=1}^{n} \quad \int\limits_0^{\frac{\pi}{2}} \quad \prod\limits_\epsilon$
In display:

$$\sum\nolimits_{i=1}^{n} \quad \int\limits_0^{\frac{\pi}{2}} \quad \prod\nolimits_\epsilon$$

$$\sum_{\substack{0 \le i \le n \\ j \in \mathbb{R}}} P(i,j) = Q(n)$$

$$\sum_{\begin{subarray}{l} 0 \le i \le n \\ j \in \mathbb{R} \end{subarray}} P(i,j) = Q(n)$$

$\bar{x_0} \quad \bar{x}_0$

$\vec{x_0} \quad \vec{x}_0$

$\hat{\mathbf{e}_x} \quad \hat{\mathbf{e}}_x$

$0.\overline{3} = \underline{\underline{1/3}}$

$\hat{XY} \qquad \widehat{XY}$

$\vec{AB} \qquad \overrightarrow{AB}$

$\underbrace{\overbrace{(a+b+c)}^{6} \cdot \overbrace{(d+e+f)}^{7}}_{\text{meaning of life}} = 42$

$$a \xleftarrow{x+y+z} b$$

$$c \xrightarrow[x<y]{a*b*c} d$$

$a, b, c \neq \{a, b, c\}$

$$1 + \left(\frac{1}{1-x^2}\right)^3 \qquad \left.\frac{\partial f}{\partial t}\right|_{t=0}$$

$\Big((x+1)(x-1)\Big)^2$

$(\big(\Big(\bigg(\Bigg(\quad \}\big\}\Big\}\bigg\}\Bigg\} \quad \|\big\|\Big\|\bigg\|\Bigg\| \quad \Downarrow\big\Downarrow\Big\Downarrow\bigg\Downarrow\Bigg\Downarrow$

$$\begin{multline}
a+b+c+d+e+f+g+h+i \\
= j+k+l+m+n \\
= o+p+q+r+s \\
= t+u+v+x+z \tag{2}
\end{multline}$$

$$\begin{align}
a &= b+c \tag{3} \\
&= d+e \tag{4}
\end{align}$$

$$
\begin{align}
a &= b + c \tag{5}\\
&= d + e + f + g + h + i + j + k + l \nonumber\\
&\quad + m + n + o \tag{6}\\
&= p + q + r + s \tag{7}
\end{align}
$$

$$
\begin{align}
a &= 1 & b &= 2 & c &= 3 \tag{8}\\
d &= -1 & e &= -2 & f &= -5 \tag{9}
\end{align}
$$

$$
\begin{gather}
a = b + c \tag{10}\\
d = e + f + g \tag{11}\\
h + i = j + k \nonumber\\
l + m = n \tag{12}
\end{gather}
$$

$$
\begin{equation}
\begin{split}
a &= b + c\\
d &= e + f + g\\
h + i &= j + k\\
l + m &= n
\end{split}
\tag{13}
\end{equation}
$$

$$
\mathbf{X} = \begin{pmatrix}
x_{11} & x_{12} & \ldots & x_{1n}\\
x_{21} & x_{22} & \ldots & x_{2n}\\
\vdots & \vdots & \ldots & \vdots\\
x_{n1} & x_{n2} & \ldots & x_{nn}
\end{pmatrix}
$$

$$
|x| = \begin{cases}
-x & \text{if} x < 0,\\
0 & \text{if} x = 0,\\
x & \text{if} x > 0.
\end{cases}
$$

$$|x| = \begin{cases} -x & \text{if } x < 0, \\ 0 & \text{if } x = 0, \\ x & \text{if } x > 0. \end{cases}$$

$$\begin{matrix} 1 & 2 \\ 3 & 4 \end{matrix} \qquad \begin{bmatrix} x_{11} & x_{12} & \dots & x_{1n} \\ x_{21} & x_{22} & \dots & x_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ x_{n1} & x_{n2} & \dots & x_{nn} \end{bmatrix}$$

$$\mathbf{H} = \begin{bmatrix} \dfrac{\partial^2 f}{\partial x^2} & \dfrac{\partial^2 f}{\partial x \partial y} \\ \dfrac{\partial^2 f}{\partial x \partial y} & \dfrac{\partial^2 f}{\partial y^2} \end{bmatrix}$$

$$\int_a^b f(x) \mathrm{d}x \qquad \int_a^b f(x)\, \mathrm{d}x$$

$$\int \int f(x) f(y)\, \mathrm{d}x\, \mathrm{d}y$$

$$\iint f(x) f(y)\, \mathrm{d}x\, \mathrm{d}y$$

$$\iint f(x) f(y)\, \mathrm{d}x\, \mathrm{d}y$$

$$\iint \quad \iiint \quad \int \cdots \int$$

$\mathcal{R}$ $\mathfrak{R}$ $\mathbb{R}$

$$\mathcal{L} = -\frac{1}{4} F_{\mu\mu} F^{\mu\mu}$$

$\mathfrak{su}(2)$ and $\mathfrak{so}(3)$ Lie algebra

$\mu, M \qquad \boldsymbol{\mu}, \boldsymbol{M}$ $\mu, M \qquad \boldsymbol{\mu}, \boldsymbol{M}$

$$r = \frac{\sum_{i=1}^n (x_i - x)(y_i - y)}{\left[\sum\limits_{i=1}^n (x_i - x)^2 \sum\limits_{i=1}^n (y_i - y)^2 \right]^{1/2}}$$

My Theorem 0.0.1. *The light speed in vacuum is* $299,792,458\,\mathrm{m/s}$.

My Theorem 0.0.2 (Energy-momentum relation)**.** *The relationship of energy, momentum and mass is*

$$E^2 = m_0^2 c^4 + p^2 c^2$$

where c is the light speed described in theorem 0.0.1.

Law 1. Don't hide in the witness box.

Jury 2 (The Twelve)**.** *It could be you! So beware and see law 1.*

Jury 3. *You will disregard the last statement.*

Margaret. No,No,No

Margaret. Denis!

证明. For simplicity, we use

$$E = mc^2$$

That's it. □

证明. For simplicity, we use

$$E = mc^2 \qquad \square$$

证明. Assuming $\gamma = 1/\sqrt{1 - v^2/c^2}$, then

$$\begin{aligned} E &= \gamma m_0 c^2 \\ p &= \gamma m_0 v \end{aligned} \qquad \square$$

证明. For simplicity, we use

$$E = mc^2. \tag{14}$$

□

证明. For simplicity, we use

$$E = mc^2 \qquad \blacksquare$$