1 Mathematics

1.1 Inline formulas

Inline formula: $a^2 + b^2 = \sqrt{c}$. The formula is part of text. Another possibility: $\int_a^b \sin(x)dx$. Yet another possibility: $\aleph$ All three are used to be shown in text.

1.2 Display formulas

Displayed formula:

$$a^2 + b^2 = \sqrt[b]{c}$$

The formula is typeset to the next line. Another possibility:

$$\int_a^b \sin(x)dx$$

Yet another possibility:

$$\aleph$$

All three are used to display not in text, but seperatly. 1

1.3 Display and numbered formulas

$$1 + 2 + 3 + \sqrt{2} \tag{1}$$

$$B \quad === \quad \frac{\partial f(x,y) \cdot g(x,y)}{\partial x} \tag{2}$$

$$B(x,y) \quad = \quad \frac{\partial \vec{f}(x,y) \times \vec{g}(x,y)^{(2+3)}}{\partial x_{12+1}} \tag{3}$$

1.4 Function in math

$\sin(\alpha)$ $\cos(\beta)$ $\log(x)$ $\exp(\infty)$

$$\begin{aligned} u_d &\to o(1/R) \quad \text{as} \quad R \to \infty \\ \partial_n U_D &\to o(1/R) \quad \text{as} \quad R \to \infty \end{aligned} \tag{4}$$

1.5 Mathematical fonts

$\dot{x}$, $\ddot{x}$, $\hat{A}$, $\vec{v}$

$\mathcal{ABCDEF}$
$\mathcal{ABCDEF}$
$\mathfrak{ABCDEF}$
$\mathbb{NZQRC}$

1.6 The amsmath package

$$
\begin{aligned}
a &= 3b + 6d = \\
&= 3 \cdot 2c + 6d = \\
&= 3 \cdot 2c + 6d = \\
&= 6c + 6d \\
&1m2e3o4w \\
&= 6c + 12e \qquad (5)
\end{aligned}
$$

$$
\begin{aligned}
A &= 25 \cdot 10^{23} \\
\Theta &= 300
\end{aligned}
$$

$$\sin^2 x + \cos^2 x = 1 \tag{6}$$

$$\frac{\sin x}{\cos x} = \tan x \tag{7}$$

$$
\begin{aligned}
\sin^2 x + \cos^2 x &= 1 \\
\frac{\sin x}{\cos x} &= \tan x
\end{aligned} \tag{8}
$$

$$
\left.\begin{aligned} 3x + 5y &= 15 \\ 2x - 4y &= 20 \end{aligned}\right\} \Longrightarrow \begin{aligned} x &= \frac{80}{11} \\ y &= -\frac{15}{11} \end{aligned}
$$

$$1 = 1 \qquad 2 = 2 \qquad 2 = 1 + 1 \tag{9}$$

$$3 + 2 = 5 \qquad 3 = 2 + 1 \qquad 3 = 1 + 1 + 1 \tag{10}$$

(11)

$$
\left.\begin{aligned} 3x + 5y &= 15 \\ 2x - 4y &= 20 \end{aligned}\right\} \Longrightarrow \begin{aligned} x &= \frac{80}{11} \\ y &= \frac{15}{11} \end{aligned}
$$

$$x = ac + bc \tag{12}$$

$$y > dc$$

$$e^{i\pi} + 1 = 0 \qquad \text{(Euler)}$$

$$e^{i\pi} + 1 = 0 \qquad \text{E-1}$$

$$x = ac + bc \tag{13}$$

$$X * ac = +bc + 1 \tag{13*}$$

$$a = 1 \tag{14a}$$
$$b_{\text{text}} = 1 + 1 \tag{14b}$$
$$c_{\text{text}} = 1 + 1 + 1 \tag{14c}$$
$$d = 1 + 2 \tag{14d}$$

14a (14a)

$$\sum_{a=R_a}^{\sum B} \frac{\sum a}{\int}$$

$$\sum_{a=R_a}^{\sum} B \, \frac{\sum a}{\int}$$

$$\int$$

1.7 Sub- and superscript

a_{bc}, a_{bc} a^{bc}, a^{bc} ${}_{a}^{b}\prod_{c}^{d}$

$a_{\text{Some Text}}$

$a^{\text{Some Text}}$

a_{SomeText}

$a_{\text{Some Text}}$

$abcde$