Mathematical Notations in LATEX

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Hello! This is my first LaTeX document. A rectangle has side lengths of (x + 1) and (x + 3). The equation

$$A(x) = x^2 + 4x + 3$$

gives the area of the rectangle.

superscripts

 $2x^3$

 $2x^{34}$

 $2x^{3x+4}$

 $2x^{3x^4+5}$

subscripts

 x_1

 x_{12}

 x_{1_2}

 $x_{1_{2_3}}$

 $a_0, a_1, a_2, \dots, a_{100}$

Greek letters

 π

П

 α

 $A = \pi r^2$

Trig functions

 $y = \sin x$

$$y = \cos x$$

$$y = \csc \theta$$

$$y = \sin^{-1} x$$

$$y = \arcsin x$$

Log functions

$$y = \log x$$

$$y = \log_5 x$$

$$y = \ln x$$

roots

$$\sqrt{2}$$

$$\sqrt[3]{2}$$

$$\sqrt[3]{2}$$

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

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

$$\frac{2}{3}$$

Fractions

About $\frac{2}{3}$ of the glass is full.

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

$$\frac{1}{1+\frac{1}{x}}$$