1 Superscript

First we will learn about superscripts.

We need to use dollar sign before we write a mathematical notation. Otherwise it will give an error.

$2x^3$

Two dollar symbol will generate a separate line for the math formula.

$$2x^34$$

Use curly brackets to enclose the power/exponent component in your mathematical formula. Otherwise, latex will only count immediate number after the power symbol.

$$2x^{34}$$

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

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

2 Subscript

'slash ldots' gives us three dots. 'slash cdots' gives us three dots, aligned at the center.

$$x_1$$

$$x_{12}$$

$$x_{1_2}$$

$$x_{1_{2_3}}$$

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

3 Greek letters

$$\pi$$

$$\Pi$$

$$\alpha$$

$$A = \pi r^2$$

We need to put a space in between Greek letter command, and later commands.

4 Trig Functions

$$y = sinx$$

Here, everything is italicized. We just want the angle to be italicized. To do that, put a slash in front of sin.

$$\sin x$$

$$\cos x$$

$$\csc \theta$$

$$\csc \Theta$$

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

$$y = \arcsin x$$

5 log functions

$$y = logx$$

$$y = \log x$$

$$y = \log_5 x$$

$$y = \ln x$$

6 roots

$$\sqrt{2}$$

$$\sqrt[3]{4}$$

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

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

7 fractions

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

We use two types of fraction writing style: one is small, the other one is large.

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

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

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