

# Insert Equation

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## 1 inline Equation

### 1.1 dollar character

$$f(x) = x^2 + 3x$$

## 1.2 parenthesis

$$f(x) = x^2 + 3x$$

## 1.3 mathematical enviroment

$$f(x) = x^2 + 3x$$

## 2 super/sub script

### 2.1 superscript

$$f(x) = x^2 + 3y^{20}$$

### 2.2 subscript

$$f(x) = x^2 + 3x_{20}$$

## 3 greek alphabet

### 3.1 lowercase

$$\alpha \beta \omega_1 \gamma \pi$$

### 3.2 uppercase

$$\Gamma \Delta \Pi^5 \Omega \quad \alpha^2 + \beta^3 = \omega$$

## 4 mathematical functions

$$\log_{10}^2 x \quad \sin^2 x \quad \cos^3 y \quad \arcsin x \quad \arccos z \quad \ln x \quad \sqrt{3x^2 + 2y_2^4} \quad \sqrt[5]{3x}$$

## 5 algebraic fraction

$$3/4 \quad \frac{x}{y} \quad \frac{\sqrt{2y_2^5}}{\sqrt[6]{\sin^2 x + \arcsin z_4^2}}$$

## 6 equation between lines

use `$$...$$` insert equation

$$f(x) = 3x + y^3$$

### 6.1 square brackets

use `\[equation...\]` insert equation

$$f(x) = 3x + y^3$$

### 6.2 environment of `displaymath`

$$f(x) = 3x + y^3$$

### 6.3 environment where equation enumerated automatically

Refer the equation 1

$$f(x) = 3x + z^3 \tag{1}$$

### 6.4 environment where equation\* are not enumerated

Refer the equation 6.4

$$f(x) = 3x + z^6$$

### 6.5 Equation in Multiple lines

$$f(x) = 3x + z^3 \tag{2}$$

$$\frac{\sqrt{2y_2^5}}{\sqrt[6]{\sin^2 x + \arcsin z_4^2}} \\ f(z) = \frac{x_2^5}{y_3^7} \tag{3}$$

### 6.6 Split Equation

$$\begin{aligned} f(x) &= 3x + 4x^2 \\ f(x) &= \sin^2 x \\ f(x) &= \cos x^3 \end{aligned} \tag{4}$$

### 6.7 Piecewise funtion

$$D(x) = \begin{cases} 3x & \text{if } x \in R \\ x^2 & \text{if } x \in Z \setminus Q \end{cases} \tag{5}$$