Mathematics

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1 Simple Mathematics

The basic mathematical equations are written here using LaTeX:

$2^2 + 2^2 = 8$

$\sqrt[4]{4096} = 8$

$e^{x+iy} = e^x(\cos y + i \sin y)$

$A \cup B = n(A) + n(B) - n(A \cap B)$

$\cos^2 \theta + \sin^2 \theta = 1$

$A \cup B = \{x \in A \; or \; x \in B\}$

2 Fractions

Simple Fractions are written here in LaTeX:

$fraction = \frac{numerator}{denominator}$

$\frac{2}{3}$

$\frac{8}{\frac{8}{3}}$

$\frac{a}{b} \geq \frac{c}{d}$

$\frac{\sqrt{x+2}}{x^2-3}$

$\frac{\frac{a}{b}}{\frac{c}{}} \times \frac{\frac{d}{e}}{f} \geq 1$

3 Variable Size of Braces

Here, Different sizes of braces are used to write the equation in LaTeX:

$$\left[\left\{(7+3)/5\right\}\times 6\right]$$

$$\left\{\left(\frac{8}{4}\right)+\left(\frac{10}{2}\right)\right\}$$

4 Summation

How to write summation in LaTeX??

$$\sum_{i=a}^{b} g(i) = 0, for\ b < a$$

$$\sum_{i=1}^{n} i = \frac{n(n+1)}{2}$$

5 Integration and Limits

$$\int_0^\infty f(x)dx$$

$$\lim_{x\to c} f(x) = L$$

6 Matrix

Matrix written in LaTeX:

$$\begin{pmatrix} 20 & 40 & 50 \\ 34 & 48 & 60 \\ 40 & 50 & 60 \end{pmatrix}$$

$$\begin{bmatrix} 20 & 40 & 50 \\ 34 & 48 & 60 \\ 40 & 50 & 60 \end{bmatrix}$$

7 Addition of Matrix

Matrix Addition is shown here:

$$\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix} + \begin{pmatrix} 5 & 6 \\ 7 & 8 \end{pmatrix} = \begin{pmatrix} 6 & 8 \\ 10 & 12 \end{pmatrix}$$

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8 Equation

In this section, it is shown how equations are centered and numbered in LaTeX.

$$3x + 4y = 2 \tag{1}$$

$$15x + 25y = 40 \tag{2}$$

$$x^2 - y^2 = (x + y)(x - y) \tag{3}$$

9 Equation Align Environment

$$\begin{aligned} 3x - 6 &= 9 \\ 3x &= 9 + 6 \\ x &= \frac{9 + 6}{3} \\ x &= 5 \end{aligned} \tag{4}$$