Mathematical terms

1 Normal

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

2 Fraction

$$\frac{a}{b} \tag{2}$$

3 Subscript

$$e_t = h_t w_a \tag{3}$$

4 Summation

$$s = \sum_{0}^{t} v_i t_i \tag{4}$$

5 Fraction Summation

$$a_t = \frac{exp(e_t)}{\sum_{i=1}^{T} exp(e_i)} \tag{5}$$

6 Complex

$$P(m^{(i}, n^{(i)}) = \sum_{j=1}^{k} \{n^{(i} = j \log(n_j^{(i)}) \tag{6}$$

7 Multiline equation

$$\begin{aligned} \text{Combined Span} = & Span[index[1]] \cup \\ & Span[index[2]] \cup \\ & Span[index[3]] \end{aligned} \tag{7}$$

8 Various Equations

$$1, 2, 3, 4, ...\infty \tag{8}$$

$$x^3 - y^{32} = 19 \tag{9}$$

$$10 \text{ oranges} \times 12 \text{ oranges} = 120 \text{ oranges} \tag{10}$$

Three Equation of Motions are:

$$S = ut + \frac{1}{2}at^2 \tag{11}$$

$$v = u + at \tag{12}$$

$$v^2 = u^2 + 2as \tag{13}$$

Where
S = Displacement
U = initial Value
V = Final Velocity
a = Acceleration
t = time of motion

9 Trigonometry

$\sin\theta$
$\sin^2\theta + \cos^2\theta = 1$
(14)

$$\cos 2\theta = 1 - 2\sin^2\theta \tag{15}$$

10 Log

$$\log \text{a} = \log \text{b} \tag{16}$$

$$\log \text{a} + \log \text{b} = \log \text{c} + \log \text{d} \tag{17}$$

$$\frac{1}{x^2 + y^{23}} \tag{18}$$

11 root

$$\sqrt{\frac{1}{\sqrt{x^2 + 2\mathrm{x} + 3}}} \tag{19}$$

$$\sqrt[3]{x} \tag{20}$$

12 Integration

$$\int_0^\infty f(x)dx = g(x) \tag{21}$$

$$\int \int_B \int g(w, x, y)\, dw\, dx\, dz$$

$$\iiint_v f(u, v, w)\, du\, dv\, dw$$

$$\iint_B \int f(g, h, i)\, dg\, dh\, di$$

13 Derrivative

$$\begin{aligned} \text{first order derrivative } &= f'(x) \\ \text{Second Order Derrivative} &= f''(x) \\ \text{Third Order Derrivative } &= f'''(x) \end{aligned}$$

13.1 Limit

$$f'(x) = \lim_{h \to 0} \frac{f(x + h) - f(x)}{h} \tag{26}$$

13.2 Partial Derrivative

$$\text{First Order Partial Derrivative} = \frac{\partial f}{\partial x}$$

$$\text{Second Order Partial Derrivative} = \frac{\partial^2 f}{\partial x^2}$$

$$K_{th}\ Order\ Partial\ Derrivative = \frac{\partial^k f}{\partial x^k}$$

$$\frac{\partial u}{\partial t} = \frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2}$$

$$\frac{\partial u}{\partial t} = \frac{\partial u}{\partial x} + \frac{\partial u}{\partial y}$$

$$F(x, y, z) = \frac{\partial^3 F}{\partial x \partial y \partial z}$$

13.3 Differentiaton

$$\frac{\mathrm{d}y}{\mathrm{d}x} 3x = 3$$

$$\frac{\mathrm{d}^3 y}{\mathrm{d}x^3} 3x^2 = 6$$

$$\frac{\mathrm{d}\cos x}{\mathrm{d}x} = -\sin x$$

$$\frac{\mathrm{d}y}{\mathrm{d}x}(2x^2 + 4x) = 4x + 4$$

{ Gotta look at this Section }

$$\frac{\partial^7 F}{\partial x^2 \partial y^3 \partial z^2}$$

14 Matrix

$a \quad b$
$c \quad d$

$$\begin{bmatrix} a & b & c \\ d & e & f \end{bmatrix} = \begin{pmatrix} a & b \\ c & d \end{pmatrix}$$

$$\begin{vmatrix} a & b & c \\ d & e & f \end{vmatrix}$$

$$\begin{matrix} \cdot \\ \vdots \cdots \ddots \end{matrix}$$

$$\begin{Vmatrix} a & b & c \\ d & e & f \end{Vmatrix}$$

15 Array & Table

$$\begin{array}{c|c} a & b \\ \hline c & d \end{array}$$

a	b	c	d
e	f	g	h

16 Bracket & Case

$$\left\{ \frac{x}{y} \right\}$$

$$F(x) = \begin{cases} x^2 + 2x & \text{if x is greater than 0} \\ 0 & \text{if x is less than 0} \end{cases}$$

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