

Chapter 1

Typesetting mathematics

1.1 Common math notation

superscript:

$$x^2$$

$$x^n$$

$$x^{23}$$

subscript:

$$x_2$$

$$x_{20}$$

Greek Letters:

$$\pi$$

$$\phi$$

$$\alpha$$

$$\beta$$

$$\theta$$

$$\epsilon$$

$$y = \pm 5$$

$$\infty$$

1.2 Simple Equation

$$ax + by + c = 0$$

$$ax + by + c = 0 \tag{1.1}$$

Multiple Equation :

$$ax + by + c = 1$$

$$x + y = 1$$

$$x + y + z = 1$$

$$ax + by + c = 1$$

$$x + y = 1$$

$$x + y = z + 1$$

$$ax + by + c = 1 \tag{1.2}$$

$$x + y = 1 \tag{1.3}$$

$$x + y = z + 1 \tag{1.4}$$

1.3 Fraction

$$a \div b$$

Fraction:

$$\frac{a}{b}$$

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

$$\frac{a^2}{b^2} = \frac{c^2}{d^2}$$

$$\frac{d^2y}{dx^2}$$

1.4 Square Root,Cube Root and nth Root

$$\sqrt{4}$$

$$\sqrt[3]{8}$$

Evaluate:

$$\sqrt{2 + \sqrt{2 + \sqrt{2 + \dots}}}$$

$$i_D = I_S(e^{\frac{v_D}{\eta \cdot v_T}} - 1) \tag{1.5}$$

$$i_D = I_S(e^{\frac{v_D}{\eta \cdot v_T}} - 1)$$

$$\ln$$

Chapter 2

Calculus

2.1 Differential Equation

$$\frac{dy}{dx} \tag{2.1}$$

$$\frac{d^2y}{dx^2} \tag{2.2}$$

$$\frac{d^2y}{dx^2} + 3\frac{dy}{dx} = 1 \tag{2.3}$$

$$\frac{d^2y}{dx^2} + 3\frac{dy}{dx} = e^{ax} \sin bx \tag{2.4}$$

2.2 Integration

2.2.1 Line Integral

$$\int$$
$$\int f(x)dx$$
$$\int f(x) \, dx$$
$$\int_{x_1}^{x_2} f(x) \, dx$$

2.2.2 Surface Integral

$$\iint (x, y) \, dx \, dy$$
$$\oint$$
$$\iiint$$

2.3 Fourier integral

$$f(t) = \frac{1}{2\pi} \int_{-\infty}^{+\infty} F(S) e^{j\omega t} \, dt \quad (2.5)$$

2.4 Maxwell's Equation

Gauss Law:

$$\vec{\nabla} \cdot \vec{E} = \frac{\rho}{\epsilon_0}$$

2.5 Vector

$$\vec{a} \cdot \vec{b} = 0$$
$$\vec{a} \times \vec{b} = 0$$

2.6 Typesetting Matrices

$$A = \begin{pmatrix} a & b & c \\ d & e & f \\ g & h & i \end{pmatrix}$$

$$A = \begin{bmatrix} a & b & c \\ d & e & f \\ g & h & i \end{bmatrix}$$

$$A = \begin{Bmatrix} a & b & c \\ d & e & f \\ g & h & i \end{Bmatrix}$$

$$\sum_{x=0}^{\infty}$$

\therefore