$$(x+a)^n = \sum_{k=0}^{n} \binom{n}{k} x^k a^{n-k}$$

$$(1+x)^n = 1 + \frac{nx}{1!} + \frac{n(n-1)x^2}{2!} + \cdots$$

$$f(x) = a_0 + \sum_{n=1}^{\infty} \left(a_n \cos\frac{n\pi x}{L} + b_n \sin\frac{n\pi x}{L} \right)$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$e^x = 1 + \frac{x}{1!} + \frac{x^2}{2!} + \frac{x^3}{3!} + \cdots, \qquad -\infty < x < \infty$$

$$\sin\alpha \pm \sin\beta = 2 \sin\frac{1}{2}(\alpha \pm \beta) \cos\frac{1}{2}(\alpha \mp \beta)$$

$$\mathbf{r} = \frac{1}{2}\mathbf{a}t^2 + \mathbf{v_0}t + \mathbf{r_0}$$

$$\begin{aligned} \int_{-\infty}^{\infty} e^{-x^2} dx &= \left[\int_{-\infty}^{\infty} e^{-x^2} dx \int_{-\infty}^{\infty} e^{-y^2} dy \right]^{1/2} \\ &= \left[\int_{0}^{2\pi} \int_{0}^{\infty} e^{-r^2} r\, dr\, d\theta \right]^{1/2} \\ &= \left[\pi \int_{0}^{\infty} e^{-u} du \right]^{1/2} \\ &= \sqrt{\pi} \end{aligned}$$

$$\begin{pmatrix} U(t) \\ V(t) \\ W(t) \end{pmatrix} = \begin{pmatrix} 1 & 0 & 0 \\ 0 & \cos Rt & -\sin Rt \\ 0 & \sin Rt & \cos Rt \end{pmatrix} \begin{pmatrix} U(0) \\ V(0) \\ W(0) \end{pmatrix}$$

$$(a_1x + b_1)(a_2x + b_2) = a_1a_2x^2 + (a_1b_2 + a_2b_1)x + b_1b_2$$