$\vec{p} = m\vec{v}$

$\vec{F}\Delta t = m\Delta\vec{v} = \Delta\vec{p}$

$m_1\vec{v}_{1i} + m_2\vec{v}_{2i} = m_1\vec{v}_{1f} + m_2\vec{v}_{2f}$

$s = r\theta$

$v_t = r\omega$

$a_T = r\alpha$

$\omega = 2\pi f$

$f = \frac{1}{T}$

$\omega_f = \omega_i + \alpha t$

$\theta = \omega_i t + \frac{1}{2}\alpha t^2$

$\omega_f^2 = \omega_i^2 + 2\alpha\theta$

$\theta = \frac{(\omega_f + \omega_i)}{2} t$

$a_c = a_R = \frac{v^2}{r} = r\omega^2$

$F_R = \frac{mv^2}{r}$

$F_R = ma_R$

$g = GM/r^2$

$F_g = \frac{GMm}{r^2} = mg$

$G = 6.67\times10^{-11}\ \frac{Nm^2}{kg^2}$

$v_{orb} = \sqrt{\frac{GM}{r}}$

$U_g = -\frac{GMm}{r}$ or mgh

$v_{esc} = \sqrt{\frac{2GM}{r}}$

$T^2 = \frac{4\pi^2}{GM} r^3$

$\tau = rF\sin\theta$

$x_{cm} = \frac{m_1x_1 + m_2x_2 + \cdots}{m_1 + m_2 + \cdots}$

$I = \Sigma mr^2 = m_1r_1^2 + m_2r_2^2 + \cdots$

$\Sigma\tau = I\alpha \qquad L_i = L_f$

$I_{ring} = mr^2 \quad I_{disk} = \frac{1}{2}mr^2 \quad I_{sphere} = \frac{2}{5}mr^2$

$I_{hollow\ sphere} = \frac{2}{3}mr^2 \quad I_{bar\ end} = \frac{1}{3}ml^2 \quad I_{bar\ mid} = \frac{1}{12}ml^2$

$L = I\omega \qquad L = mvr \qquad L = m\omega^2 r$

$C = \frac{Q}{\Delta V} \qquad C = \frac{\epsilon_0 A}{d} \qquad \epsilon_0 = 8.85\times10^{-12}\ \frac{C^2}{Nm^2}$

$C_{eq} = C_1 + C_2 + \cdots \qquad \frac{1}{C_{eq}} = \frac{1}{C_1} + \frac{1}{C_2} + \cdots$

$E = \frac{1}{2}QV = \frac{1}{2}CV^2 = \frac{Q^2}{2C}$

$V = IR \qquad P = IV = I^2R = \frac{V^2}{R}$

$R_{eq} = R_1 + R_2 + \cdots \qquad \frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2} + \cdots$

$V = V_{max}\left(1 - e^{-\frac{t}{RC}}\right) \qquad V = V_{max}\left(e^{-\frac{t}{RC}}\right)$

$\tau = RC$

$F = qvB\sin\theta$

know right hand rule