

PHYSICS 12 FORMULAE

Vector Kinematics in Two Dimensions

$$v = v_0 + at \quad \bar{v} = \frac{v + v_0}{2}$$

$$v^2 = v_0^2 + 2ad \quad d = v_0t + \frac{1}{2}at^2$$

Vector Dynamics

$$F_{net} = ma \quad F_g = mg$$

$$F_{fr} = \mu F_N$$

Work, Energy, and Power

$$W = Fd \quad E_p = mgh$$

$$E_k = \frac{1}{2}mv^2 \quad P = \frac{W}{\Delta t}$$

Momentum

$$p = mv \quad \Delta p = F_{net} \Delta t$$

Equilibrium

$$\tau = Fd$$

Circular Motion

$$T = \frac{1}{f} \quad a_c = \frac{v^2}{r} = \frac{4\pi^2 r}{T^2}$$

$$F_c = ma_c$$

Gravitation

$$F_g = G \frac{m_1 m_2}{r^2}$$

Electrostatics

$$F = k \frac{Q_1 Q_2}{r^2} \quad E = \frac{F}{Q} \quad E = k \frac{Q}{r^2}$$

$$\Delta V = \frac{\Delta E_p}{Q} \quad E = \frac{\Delta V}{d}$$

$$E_p = k \frac{Q_1 Q_2}{r} \quad V = k \frac{Q}{r}$$

Electric Circuits

$$I = \frac{Q}{\Delta t} \quad V = IR$$

$$P = IV \quad V_{terminal} = \mathcal{E} \pm Ir$$

Electromagnetism

$$F = BIl \quad F = QvB$$

$$B = \mu_0 nI = \mu_0 \frac{N}{l} I \quad \mathcal{E} = Blv$$

$$\Phi = BA \quad \mathcal{E} = -N \frac{\Delta \Phi}{\Delta t}$$

$$V_{back} = \mathcal{E} - Ir \quad \frac{V_s}{V_p} = \frac{N_s}{N_p} = \frac{I_p}{I_s}$$