

# Physics Data Sheet

## Formulae

$$\vec{v}_2 = \vec{v}_1 + \vec{a}t$$

$$\vec{v}_2^2 = \vec{v}_1^2 + 2\vec{a}\vec{d}$$

$$\vec{d} = \vec{v}_1t + \frac{1}{2}\vec{a}t^2$$

$$\vec{d} = \vec{v}_2t - \frac{1}{2}\vec{a}t^2$$

$$\vec{d} = \frac{\vec{v}_1 + \vec{v}_2}{2}t$$

$$\vec{F}_f = \mu\vec{F}_N$$

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

$$\vec{\varepsilon} = k\frac{q_m}{r^2}$$

$$r = \frac{v^2}{g \tan \theta}$$

$$\vec{F} = \frac{kq_1q_2}{r^2}$$

$$F = BIL \sin \theta$$

$$R = \rho \frac{L}{A}$$

$$F = qvB \sin \theta$$

$$V = IR$$

$$P = IV$$

$$A = A_0 \left(\frac{1}{2}\right)^{\frac{t}{T_{1/2}}}$$

$$B = \frac{\mu_0 I}{2\pi r}$$

$$E_n = \frac{-13.6 \text{ eV}}{n^2}$$

$$E = hf$$

$$E = mc^2$$

$$r_n = (5.29 \times 10^{-11} \text{ m})n^2$$

$$hf = E_K + W_0$$

$$p = \frac{h}{\lambda}$$

## Constants

$$g = 9.80 \text{ m/s}^2$$

$$c = 3.00 \times 10^8 \text{ m/s}$$

$$k = 9.0 \times 10^9 \text{ N} \cdot \text{m}^2/\text{C}^2$$

$$e = -1.602 \times 10^{-19} \text{ C}$$

$$1 \text{ eV} = 1.602 \times 10^{-19} \text{ J}$$

$$h = 6.626 \times 10^{-34} \text{ J} \cdot \text{s}$$

$$\mu_0 = 4\pi \times 10^{-7} \text{ T} \cdot \frac{\text{m}}{\text{A}}$$

$$m_n = 1.675 \times 10^{-27} \text{ kg}$$

$$m_e = 9.11 \times 10^{-31} \text{ kg}$$

$$m_p = 1.673 \times 10^{-27} \text{ kg}$$

$$1 \text{ u} = 1.66 \times 10^{-27} \text{ kg} = 931.5 \text{ MeV}/c^2$$

## Quadratic Equation

$$\text{If } ax^2 + bx + c = 0, \text{ then } x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}.$$