Physics 3204 Data Sheet

Formulae

$$\vec{v}_2 = \vec{v}_1 + \vec{a}t \qquad \vec{v}_2{}^2 = \vec{v}_1{}^2 + 2\vec{a}\vec{d} \qquad \vec{d} = \vec{v}_1 t + \frac{1}{2}\vec{a}t^2 \qquad \vec{d} = \vec{v}_2 t - \frac{1}{2}\vec{a}t^2$$

$$\vec{d} = \frac{\vec{v}_1 + \vec{v}_2}{2}t \qquad v = \frac{2\pi r}{T} \qquad a_c = \frac{v^2}{r} \qquad F_c = \frac{mv^2}{r}$$

$$\vec{F}_f = \mu\vec{F}_N \qquad F_g = \frac{Gm_1m_2}{r^2} \qquad v = \sqrt{\frac{Gm}{r}} \qquad F_e = \frac{kq_1q_2}{r^2}$$

$$\vec{E} = \frac{kq}{\vec{r}^2} \qquad P = IV \qquad R = \frac{V}{I} \qquad B = \frac{\mu_0 I}{2\pi r}$$

$$F = qvB\sin\theta \qquad F = BIL\sin\theta \qquad E = hf \qquad E = \frac{hc}{\lambda}$$

$$hf = E_K + W_0 \qquad E_{K_{\max}} = eV_{\text{stop}} \qquad c = f\lambda \qquad p = \frac{h}{\lambda}$$

$$E_n = \frac{-13.6}{n^2}\ \text{eV} \qquad \lambda = \frac{h}{mv}$$

Constants

$g = 9.81\ \text{m/s}^2$	$G = 6.67\times10^{-11}\ \text{N}\cdot\text{m}^2/\text{kg}^2$	$m_{\text{Earth}} = 5.97\times10^{24}\ \text{kg}$
$r_{\text{Earth}} = 6.38\times10^{6}\ \text{m}$	$m_{\text{moon}} = 7.35\times10^{22}\ \text{kg}$	$m_{Sun} = 1.99\times10^{30}\ \text{kg}$
$k = 8.99\times10^{9}\ \text{N}\cdot\text{m}^2/\text{C}^2$	$e = 1.60\times10^{-19}\ \text{C}$	$\mu_0 = 4\pi\times10^{-7}\ \text{T}\cdot\frac{\text{m}}{\text{A}}$
$h = 6.63\times10^{-34}\ \text{J}\cdot\text{s}$	$1\ \text{eV} = 1.60\times10^{-19}\ \text{J}$	$c = 3.00\times10^{8}\ \text{m/s}$
$m_e = 9.11\times10^{-31}\ \text{kg}$	$m_p = 1.673\times10^{-27}\ \text{kg}$	$m_n = 1.675\times10^{-27}\ \text{kg}$

Quadratic Formula

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