

Formula Sheet for Physics 2048 Exam 1

You may use these equations freely unless a problem specifically prescribes a different approach.

$$\Delta \vec{r} = \vec{r} - \vec{r}_0$$

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

$$G = 6.67 \times 10^{-11} \text{ N m}^2/\text{kg}^2$$

$$\vec{v}_{av} = \frac{\Delta \vec{r}}{\Delta t}$$

$$\vec{v} = \lim_{\Delta t \rightarrow 0} \frac{\Delta \vec{r}}{\Delta t} = \frac{d\vec{r}}{dt}$$

$$\vec{a}_{av} = \frac{\Delta \vec{v}}{\Delta t}$$

$$\vec{a} = \lim_{\Delta t \rightarrow 0} \frac{\Delta \vec{v}}{\Delta t} = \frac{d\vec{v}}{dt}$$

$$x = x_0 + v_{0x}t + \frac{1}{2}a_x t^2$$

$$v_x = v_{0x} + a_x t$$

$$v_x^2 = v_{0x}^2 + 2a_x(x - x_0)$$

$$y = y_0 + v_{0y}t + \frac{1}{2}a_y t^2$$

$$v_y = v_{0y} + a_y t$$

$$v_y^2 = v_{0y}^2 + 2a_y(y - y_0)$$

$$a_{rad} = \frac{v^2}{r}$$

$$\vec{v}_{P/A} = \vec{v}_{P/B} + \vec{v}_{B/A}$$

$$\vec{R} = \vec{F}_1 + \vec{F}_2 + \vec{F}_3 + \dots = \sum \vec{F}$$

$$\sum \vec{F} = m\vec{a}$$

$$w = mg$$

$$\vec{F}_{AonB} = -\vec{F}_{BonA}$$

$$\sin \theta = y/r$$

$$\cos \theta = x/r$$

$$\tan \theta = y/x$$

$$F_{cent} = m v^2/r$$

$$K = 1/2 m v^2$$

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

$$S = 2 \pi r, A = \pi r^2$$

$$A = 4 \pi r^2, V = 4/3 \pi r^3$$

$$A = 1/2 b h$$

$$C = \sqrt{A^2 + B^2}$$