Equation Sheet

These equations will be supplied on the tests, if they are necessary for the problems.

$$x = x_0 + v_o t + \tfrac{1}{2} a t^2$$

$$v = v_o + at$$

$$v^2 = v_0^2 + 2a(x - x_0)$$

$$F = \frac{mv^2}{r} \qquad T = \frac{2pr}{v}$$

$$F = -kx$$

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

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

$$U_s = \tfrac{1}{2} k x^2$$

$$P = (F_{\text{dir. of motion}})v$$

$$x_{cm} = \frac{1}{M}\int x\, dm$$

$$\vec{F} = \frac{d\vec{p}}{dt}$$

$$\vec{J} = \int \vec{F}(t)\, dt$$

$$v_{1_f} = \frac{m_1 - m_2}{m_1 + m_2} v_{1_i} + \frac{2m_2}{m_1 + m_2} v_{2_i}$$

$$v_{2_f} = \frac{2m_1}{m_1 + m_2} v_{1_i} + \frac{m_2 - m_1}{m_1 + m_2} v_{2_i}$$