Some useful equations:

$d(ax^n)/dt = anx^{n-1}$

$de^{ax}/dx = ae^{ax}$

$d[\sin(ax)]/dx = a\cos(ax)$

$\vec{a}\cdot\vec{b} = a\cdot b\cdot\cos\theta$

$\vec{a}\times\vec{b} = a\cdot b\cdot\sin\theta\,\hat{n}$

1 inch = 2.54 cm

$\vec{v} = \frac{d\vec{r}}{dt}$

$\vec{a} = \frac{d\vec{v}}{dt}$

1 mile = 1609.3 m

$x = x_o + v_o t + \frac{1}{2}at^2$

$v = v_o + at$

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

$W = mg$

$f = \mu N$

$a = v^2/r$

$F_{sp} = -kx$

g = 9.8 m/s² = 32.2 ft/s²

1 lb = 4.448 N

$\vec{F} = G\frac{m_1 m_2}{r^2}\hat{r}$

G = 6.67 x 10^{-11} m^3/kg s^2

$U_G = -G\frac{m_1 m_2}{r}$

$dW = \vec{F}\cdot d\vec{r}$

$W = \int F\,dx$

$K = \frac{1}{2}m\,v^2$

$P = \frac{dW}{dt}$

$P = \vec{F}\cdot\vec{v}$

$U_{sp} = \frac{1}{2}kx^2$

$U_g = mgy$

$F(x) = -dU(x)/dx$

$\Delta E = \Delta K + \Delta U = 0$

$\Delta E = W_{NC}$

$\vec{P} = m\vec{v}$

$I_p = I_{CM} + ML^2$

$M\vec{r}_{CM} = \sum m_i\vec{r}_i$

$If \sum \vec{F}_{ext} = 0, then\ \Delta\vec{P} = 0$

$\Delta K = 0\,(elastic)$

$v = \omega r$

$\theta = \theta_0 + \omega_0 t + \frac{1}{2}\alpha t^2$

$\omega = \omega_0 + \alpha t$

$\vec{\tau} = \vec{r}\times\vec{F}$

$\sum \tau = I\alpha$

$\vec{l} = \vec{r}\times\vec{P}$

$I_D = \frac{1}{2}MR^2$

$I = MR^2$

$l = I\omega$

$K = \frac{1}{2}I\omega^2$

$PV = N k_b T$

$If \sum \tau_{ext} = 0, then\ \Delta l = 0$

$k_b = 1.38 \times 10^{-23}$ J/K

$T_C = T - 273.15$

$x = A\cos(\omega t + \phi)$

$\rho = M/V$

$Q = mc\,\Delta T$

$Q = mL$

$T = 2\pi/\omega$

$\omega = \sqrt{k/m}$

$\omega = \sqrt{g/L}$

$y = A\sin(kx - \omega t + \phi)$

$v = \omega/k$

$k = 2\pi/\lambda$

$p = F/A$

$p = p_o + \rho g y$

$F_{buoy} = \rho g V$