PHYS 1121 **Information Sheet**

$$\Delta A(x,y,z) = \frac{\partial A}{\partial x}\Delta x + \frac{\partial A}{\partial y}\Delta y + \frac{\partial A}{\partial z}\Delta z \qquad V_c = \pi R^2 L \qquad V_b = LWH \qquad V_s = (4/3)\pi R^3$$

$$A_x = A\cos\theta \qquad A_y = A\sin\theta \qquad \theta = tan^{-1}\left(\frac{A_y}{A_x}\right) \qquad A = \sqrt{{A_x}^2 + {A_y}^2}$$

$$a_c = v^2/r \qquad \sum \boldsymbol{F} = m\boldsymbol{a} \qquad \sum \boldsymbol{F} = 0 \qquad \sum \tau = 0$$

$$\tau = Fs\sin\theta \qquad \sum \tau = I\alpha \qquad F = k\,\Delta y \qquad T = 2\pi\sqrt{\frac{m}{k}}$$

$$W = Fd\cos\theta \qquad W_{total} = \Delta KE = \frac{1}{2}mv_f^2 - \frac{1}{2}mv_i^2 \qquad \Delta U = mg\,\Delta y$$

$$\Delta KE = -\Delta U + W_f \qquad E = KE + U \qquad KE = \frac{1}{2}mv^2$$

$$mgh = \tfrac{1}{2}mv^2 + \tfrac{1}{2}I\omega^2 \qquad I = mr^2\left(\frac{g}{a} - 1\right) \qquad T = 2\pi\sqrt{\frac{l}{g}}$$

$$\langle\omega\rangle = \Delta\theta/\Delta t \qquad \langle\alpha\rangle = \Delta\omega/\Delta t \qquad h = r\theta \qquad v = r\omega \qquad a = r\alpha$$

$$f = \mu N \qquad \boldsymbol{p}_f = \boldsymbol{p}_i \qquad \boldsymbol{p} = m\boldsymbol{v} \qquad v = \lambda f \qquad L = n\lambda/2$$

$$v^2 = {v_o}^2 + 2a\,\Delta x \qquad v = v_o + at \qquad x = x_o + v_o t + \tfrac{1}{2}at^2 \qquad v = \sqrt{\frac{T}{d_l}}$$

$$g = 9.81\ m/s^2 \qquad \log(xy) = \log x + \log y \qquad \log(x^n) = n\log x$$