Physics 2205 11 November, 1999
Equation Sheet for Exam 2

$g = 9.8\ \text{m/s}^2$ $\quad I_o = 10^{-12}\ \text{W/m}^2$

$v = \Delta x/\Delta t$ $\quad a = \Delta v/\Delta t$

$F_g = m\ g$ $\quad F_e = -\ k\ x$ $\quad F_{fr} = \mu\ F_N$

$U_g = m\ g\ h$ $\quad U_e = \tfrac{1}{2}\ k\ x^2$ $\quad F_b = \rho_{fl}\ V_d\ g$

$K = \tfrac{1}{2}\ m\ v^2$ $\quad W = F\ d \cos\theta$ $\quad P = W/t$

$\boldsymbol{p} = m\ \boldsymbol{v}$ $\quad \Sigma\ \boldsymbol{F} = \Delta\boldsymbol{p}/\Delta t$ $\quad v_{1i} - v_{2i} = v_{2f} - v_{1f}$

$x_{cm} = \Sigma\ (m_i\ r_i)\ /\ \Sigma\ m_i$

$\theta = (\tfrac{1}{2})\ \alpha t^2 + \omega_o t + \theta_o$ $\quad x = (\tfrac{1}{2})\ at^2 + v_o t + x_o$ $\quad s = \theta\ r$

$\omega = \alpha t + \omega_o$ $\quad v = at + v_o$ $\quad \omega = \Delta\theta/\Delta t$ $\quad v = \omega\ r$

$\omega^2 = \omega_o^{\,2} + 2\alpha(\theta - \theta_o)$ $\quad v^2 = v_o^{\,2} + 2a(x - x_o)$ $\quad \alpha = \Delta\omega/\Delta t$ $\quad a_t = \alpha\ r$

$a_r = v^2/r = \omega^2 r$

$\tau = r\ F \sin\theta$ $\quad \Sigma\ \tau = I\ \alpha$

$\rho = m/V$ $\quad P = F/A$ $\quad \Delta P = \rho\ g\ h$

$P_{in} = P_{out}$ $\quad A_1 v_1 = A_2 v_2 = \Delta V/\Delta t$

$f = 1/T$ $\quad \omega = 2\ \pi\ f$

$T = 2\ \pi\ (m/k)^{1/2}$ $\quad T = 2\ \pi\ (L/g)^{1/2}$

$v = \lambda\ f$ $\quad v = (F_T L/m)^{1/2}$ $\quad \lambda_n = 2L/n$

$f_n = vn/(2L) = n\ f_1$

$\theta_i = \theta_r$

$\beta_2 - \beta_1 = 10 \log (I_2/I_1)$ $\quad I \propto 1/r^2$ $\quad A \propto 1/r$

$P = I/A$

$f_{beat} = \Delta f$ $\quad \Delta\lambda/\lambda = v_{source}/v_{wave}$

P here can represent either power or pressure, depending on the context. Similarly, *A* can be either area or amplitude.