

$$v = \lambda f$$

$$3 \frac{\lambda}{2} = 12 \text{ m}$$

$$8 \text{ m/s} = 8 \text{ m} * f$$

$$\lambda = 8 \text{ m}$$

$$f = 1 \text{ Hz}$$

$$a = -\omega^2 y$$

$$\left. \frac{dy}{dt} = v(t) \right|_s = -\omega y_m = -2\pi * 1 * 2 * 10^{-3}$$
$$= -4\pi * 10^{-3} = -12.5 * 10^{-3}$$
$$= -0.0125 \text{ m/s}$$

$$\frac{M}{L} = \mu = 40 \text{ } \mu\text{g/cm} = \frac{40 * 10^{-6} \text{ kg}}{10^{-2} \text{ m}} \text{ SF units}$$

$$y(x,t) = y_m \sin(kx - \omega t + \phi)$$

$$y(x,0) = y_m \sin(kx - \omega * 0 + \phi)$$

$$v, \mu \rightarrow v = \lambda f$$

$$\tau = 0 \rightarrow \sqrt{\frac{\tau}{\mu}} = a_2 v$$

$$V_1 = \sqrt{\frac{\tau_1}{\mu_1}}$$

$$V_2 = ? \sqrt{\frac{\tau_2}{\mu_2}}$$

$$\tau_2 = 4\tau_1$$

$$V_2 = 2V_1$$

$$P_1 = \frac{1}{2} \mu_1 V_1 \omega_1^2 Y_{m1}^2$$

$$P_2 = \frac{1}{2} \mu_2 V_2 \omega_2^2 Y_{m2}^2$$

$$\frac{P_2}{P_1} = (4) \left(\frac{1}{2}\right) (1)(1) = 2$$

$$\mu_2 = 4\mu_1$$
$$\frac{V_2}{V_1} = \sqrt{\frac{\tau_2/\mu_2}{\tau_1/\mu_1}}$$

$$= \sqrt{\frac{\mu_1}{\mu_2}}$$

$$7 \text{ watt} \rightarrow 14 \text{ watt} = \sqrt{14} = \frac{1}{2}$$

$$v = \lambda f / 10$$

$$\omega / 10$$

$$\left(\frac{\omega}{10}\right)^2 = \frac{\omega^2}{100}$$