

Possibly useful relations:

$$F_x = -kx$$

$$f = \frac{1}{T}$$

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

$$\omega = 2\pi f$$

$$T = 2\pi \sqrt{\frac{L}{g}}$$

$$E_{\text{total}} = \frac{1}{2}m\omega^2 A^2$$

$$v = \lambda f$$

$$y(x, t) = A \cos(\omega t - kx)$$

$$y(x, t) = 2A \sin(\omega t) \sin(kx)$$

$$\Delta P = -B \frac{\Delta V}{V}$$

$$I = \frac{P}{A}$$

$$\beta = 10 \log_{10}\left(\frac{I}{I_0}\right)$$

$$L = n \frac{\lambda}{4} \quad n = 1, 3, 5 \dots$$

$$f_{\text{beat}} = \Delta f = |f_2 - f_1|$$

$$f_o = f_s \left(\frac{1}{1 - v_s/v} \right)$$

$$f_o = f_s \left(\frac{1 - v_0/v}{1 - v_s/v} \right)$$

$$\vec{F}_{\text{net}} = m\vec{a}$$

$$\cos \theta = \text{adjacent/hypotenuse} \quad \sin \theta = \text{opposite/hypotenuse}$$

$$\tan \theta = \sin \theta / \cos \theta$$

$$U = \frac{1}{2}kx^2$$

$$T = 2\pi \sqrt{m/k}$$

$$v = -\omega A \sin(\omega t)$$

$$a = -\omega^2 A \cos(\omega t)$$

$$E_{\text{total}} = \frac{1}{2}kA^2$$

$$T = 2\pi \sqrt{\frac{I}{mgd}}$$

$$k = 2\pi/\lambda$$

$$f = \frac{v_1}{\lambda_1} = \frac{v_2}{\lambda_2}$$

$$L = n\lambda/2 \quad n = 1, 2, 3 \dots$$

$$v = \sqrt{B/\rho}$$

$$v = v_0 \sqrt{T/T_0}$$

$$I_0 = 10^{-12} \text{ W/m}^2$$

$$L = n \frac{\lambda}{2} \quad n = 1, 2, 3 \dots$$

$$v = 331 \frac{\text{m}}{\text{s}} \quad \text{at } T = 273\text{K}$$

$$f_o = f_s (1 - v_0/v)$$

$$v = \sqrt{F/\mu}$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$