

# Oscillations – Chapter 16 - Summary

displacement at time  $t$       phase

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

amplitude      time      phase constant (phase angle)

angular frequency

$$\omega = \frac{2\pi}{T}$$

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

$$v(t) = -v_m \sin(\omega t + \phi) \quad v_m = \omega x_m$$

$$a(t) = -a_m \cos(\omega t + \phi) \quad a_m = \omega^2 x_m$$

$$a(t) = -\omega^2 x(t)$$

$$k = m\omega^2$$

$$K(t) = \frac{1}{2}mv^2$$

$$U(t) = \frac{1}{2}kx^2$$

$$E = U + K = \frac{1}{2}kx_m^2$$

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

$$T = 2\pi \sqrt{\frac{I_o}{mgh}}$$