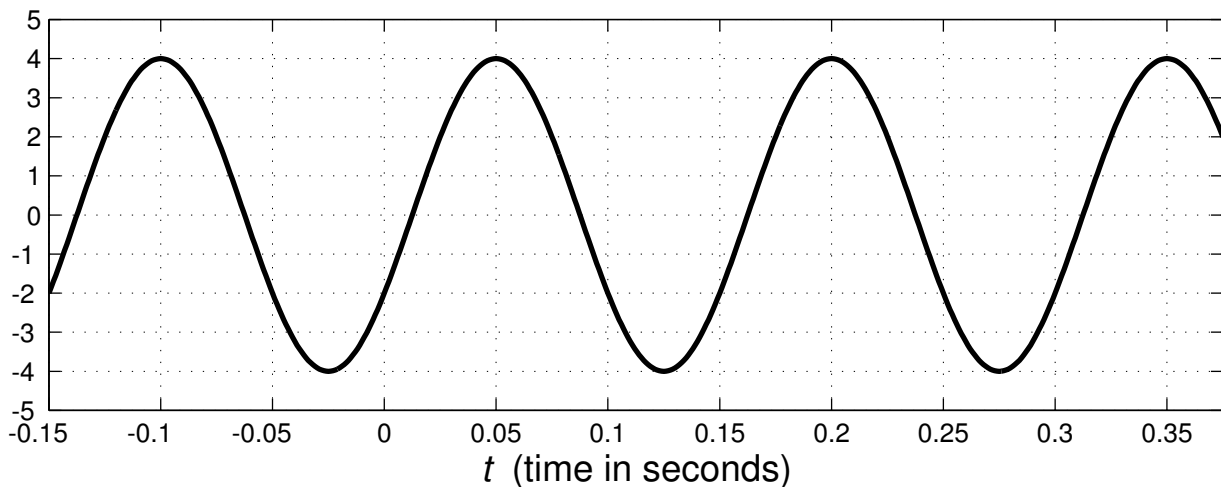


**PROBLEM:**

$$\text{Sinusoidal Signal } x(t) = A \cos(\omega_0 t + \phi)$$



The above graph is a plot of a sinusoidal signal  $x(t) = A \cos(\omega_0 t + \phi)$ .

- (a) Determine numerical values for  $A$ ,  $\omega_0$  and  $\phi$  with  $-\pi < \phi \leq \pi$ .
- (b) By a suitable choice of delay  $t_d$ , we can shift  $x(t)$  to obtain the new signal

$$y(t) = x(t - t_d) = A \cos(\omega_0 t + \pi/3) \quad (1)$$

There are an infinite number of values of  $t_d$  that satisfy Equation (1). Determine at least **two** different values of  $t_d$  that satisfy Equation (1), or give a general formula for all the possible values.