

1. A pulse moving to the right along the x axis is represented by the wave function:

$$y(x, t) =$$

where x and y are measured in centimeters and t is measured in seconds.  
Plot the wave function at  $t = 0$ ,  $t = 1.0$  s and  $t = 2.0$  s.
2. Transverse waves with a speed of 50.0 m/s are to be produced in a taut string. A 5.00 m length of string with a total mass of 0.0600 kg is used. What is the required tension?
3. Transverse waves travel with a speed of 20 m/s in a string under a tension of 6.00 N. What tension is required to produce a wave speed of 30 m/s in the same string?
4. (a) Write the expression for y as a function of x and t for a sinusoidal wave traveling along a rope in the negative x direction with the following characteristics:  $A = 8$  cm ,  $\lambda = 80.0$  cm ,  $f = 3$  Hz , and  $y(0, t) = 0$  at  $t = 0$  (b) Write the expression for y as a function of x and t for the wave in part(a) assuming that  $y(x, 0) = 0$  at the point  $x = 10$  cm
5. A sinusoidal wave train is described by the equation  $y = (0.25\text{m}) \sin(0.30x - 40t)$  where x and y are in meters and t is in seconds. Determine for this wave the (a) Amplitude, (b) Angular frequency, (c) Angular wave number , (d) Wavelength , (e ) Wave speed and (f) Direction of motion
6. A sinusoidal wave on a string is described by the equation  $y = (0.51\text{cm}) \sin(kx - \omega t)$  where  $k = 3.10$  rad/cm and  $\omega = 9.30$  rad/s . How far does a wave crest move in 10 s ? Does it move in the positive or negative x direction?
7. A wave is described by  $y = (2\text{ cm}) \sin(kx - \omega t)$  , where  $k = 2.11$  rad/m ,  $\omega = 3.62$  rad/s, x is in meters and t is in seconds. Determine the amplitude, wavelength, frequency & the speed of the wave?
8. A sinusoidal wave on a string is described by the equation  $y = (0.15\text{m}) \sin(0.80x - 50t)$  Where x and y are in meters and t is in seconds. If the mass per unit length of this string is 12 g/m determine (a) The speed of the wave (b) The wavelength (c) The frequency