

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

$$y(x, t) = \frac{2}{(x - 3.0t)^2 + 1}$$

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