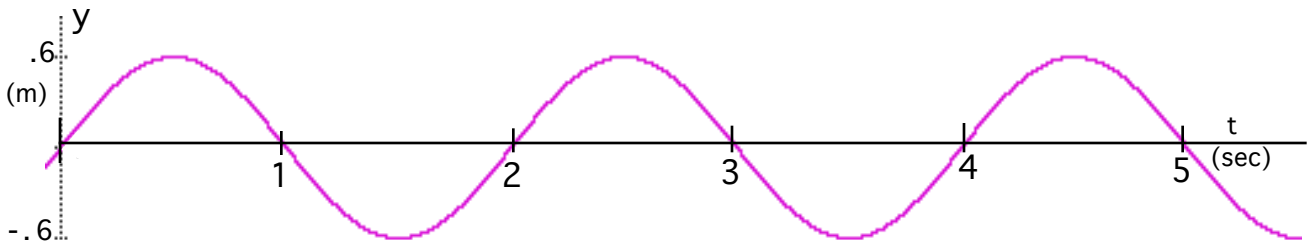
ATTACHMENT #1

The graph shown below is y(t) at a certain position x, of a wave traveling toward +x at a speed of 5 m/sec along a wire.

You are to write y(x,t) in the form $y = y_m \sin(kx - \omega t)$, for this traveling wave, with numbers for the constants k, and ω.



An example of solving for t from an equation y(x,t).

Given: (1) $y = 15 \sin(10x - 8t)$ If $y = 12$ m at $x = 2$ m, find t.

Step 1. Substitute: (2) $12 = 15 \sin(20 - 8t)$

Step 2. Invert: (3) $20 - 8t = \text{Arcsin } .8$

Step 3. Solve for t:

$$(4) \quad t = \frac{20 - \text{Arc sin } .8}{8} = 2.62 \text{ sec}$$

For the sample, (1), particle speed, $\frac{dy}{dt} = v(x,t) = -120 \frac{m}{sec} \cos(10x - 8t)$

from which maximum is Vm 120 m/sec.