

Answer on Question #73396- Physics-Other

A sinusoidal wave is described by $y(x,t) = 3.0 \sin(5.95t - 4.20x)$ cm where x is the position along the wave propagation. Determine the amplitude wavenumber wavelength frequency and velocity of the wave

Solution

The amplitude is $A=3.0$ cm.

The wave number is $k = 4.20 \text{ cm}^{-1}$.

The frequency is

$$f = \frac{5.95}{2\pi} = 0.95 \text{ Hz}.$$

The velocity of the wave is

$$v = \frac{\omega}{k} = \frac{5.95}{4.20} = 1.42 \frac{\text{cm}}{\text{s}}.$$

Wavelength is

$$\lambda = \frac{v}{f} = \frac{1.42}{0.95} = 1.49 \text{ cm}.$$

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