

55. Using Eq. 17-37, we have

$$y' = \left[0.60 \cos \frac{\pi}{6} \right] \sin \left(5\pi x - 200\pi t + \frac{\pi}{6} \right)$$

with length in meters and time in seconds (see Eq. 17-42 for comparison).

(a) The amplitude is seen to be

$$0.60 \cos \frac{\pi}{6} = 0.3\sqrt{3} = 0.52 \text{ m} \quad .$$

(b) Since $k = 5\pi$ and $\omega = 200\pi$, then (using Eq. 17-11)

$$v = \frac{\omega}{k} = 40 \text{ m/s} \quad .$$

(c) $k = 2\pi/\lambda$ leads to $\lambda = 0.40 \text{ m}$.