Answer on Question #43418, Physics, Electrodynamics

A wavelength is 3.50 cm on a region that is upper and another wavelength that is 4.20 cm. If the speed of the waves on the upper portion is 6.90 cm/s, then the speed of the waves on the lower region is?

Solution:

The mathematical relationship between the speed (v) of a wave and its wavelength (λ) and frequency (f) is

$$v = f\lambda$$

In our case the frequency is constant, thus

$$f = \frac{v_1}{\lambda_1} = \frac{v_2}{\lambda_2}$$

So,

$$v_2 = v_1 \frac{\lambda_2}{\lambda_1} = 6.9 \cdot \frac{4.20}{3.50} = 8.28 \text{ cm/s}$$

Answer: $v_2 = 8.28 \text{ cm/s}$ **.**