

P #4

Ch 14 - pg 456

a) Find v at 27°C

$$v = (331 \text{ m/s}) \cdot \sqrt{1 + \frac{T}{273}}$$

$$= (331 \text{ m/s}) \cdot \sqrt{1 + \frac{27}{273}}$$

$$v = 347 \text{ m/s}$$

$$f = 20 \text{ Hz}$$

$$v = \lambda \cdot f \quad (347 \text{ m/s}) = \lambda \cdot (20 \text{ Hz})$$

$$\lambda = 17.3 \text{ m}$$

$$\begin{aligned} \text{b) } v &= 347 \text{ m/s} \\ f &= 20,000 \text{ Hz} \end{aligned}$$

$$v = \lambda \cdot f$$

$$(347 \text{ m/s}) = \lambda \cdot (20,000 \text{ Hz})$$

$$\lambda = .0173 \text{ m}$$