20.13. **Model:** The wave is a traveling wave.

Solve: **(a)** A comparison of the wave equation with Equation 20.14 yields: $A = 5.2$ cm, $k = 5.5$ rad/m, $\omega = 72$ rad/s, and $\phi_0 = 0$ rad. The frequency is

$$f = \frac{\omega}{2\pi} = \frac{72 \text{ rad / s}}{2\pi} = 11.5 \text{ Hz}$$

(b) The wavelength is

$$\lambda = \frac{2\pi}{k} = \frac{2\pi}{5.5 \text{ rad / m}} = 1.14 \text{ m}$$

(c) The wave speed $v = \lambda f = 13.1$ m / s.