

46. **REASONING AND SOLUTION**

a. If the wheel does not slip, a point on the rim rotates about the axle with a speed

$$v_T = v = 15.0 \text{ m/s}$$

For a point on the rim

$$\omega = v_T/r = (15.0 \text{ m/s})/(0.330 \text{ m}) = \boxed{45.5 \text{ rad/s}}$$

b.

$$v_T = r\omega = (0.175 \text{ m})(45.5 \text{ rad/s}) = \boxed{7.96 \text{ m/s}}$$