

6. (a) To avoid touching the spokes, the arrow must go through the wheel in not more than

$$\Delta t = \frac{1/8 \text{ rev}}{2.5 \text{ rev/s}} = 0.050 \text{ s} .$$

The minimum speed of the arrow is then

$$v_{\min} = \frac{20 \text{ cm}}{0.050 \text{ s}} = 400 \text{ cm/s} = 4.0 \text{ m/s} .$$

- (b) No – there is no dependence on radial position in the above computation.