All but point D

5/02 The shaft of the wheel unit rolls without slipping on the fixed horizontal surface, and point O has a velocity of 3 ft/sec to the right. By the method of this article, determine the velocities of points A, B, C, and D.

\[ V_0 = \omega r_0 \]

\[ \omega = \frac{V_0}{r_0} = \frac{3}{(\frac{12}{12})} = 18 \text{ \( \frac{\text{rad}}{s} \)} \]

**Point A**

\[ V_A = \omega r_A = (18)(\frac{10+2}{12}) = 18 \]

**Point B**

\[ V_B = \omega r_B = (18)(\frac{10-2}{12}) = 12 \]

**Point C**

\[ V_C = \omega r_C \]

Find \( r_C \)

\[ r_C = \sqrt{10^2 + 2^2} = 10.20 \text{ \( \text{in} \)} \]

\[ V_C = (18)(\frac{10.2}{12}) = 15.30 \text{ \( \frac{\text{ft}}{s} \)} \]

\[ \tan \theta = \frac{2}{10} \quad \theta = 11.31^\circ \]

\[ V_C = 15.30 \text{ \( \frac{\text{ft}}{s} \)} \]