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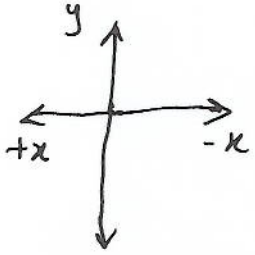
our observer is car B. (We shall use vector formulation)

$$V_A = V_B + \Omega \times r_{A/B} + V_{A/B}$$

$$\Rightarrow V_{A/B} = V_A - V_B - (\Omega \times r_{A/B})$$



$$V_A = 25j$$

$$V_B = -15i$$

$$r_{A/B} = -200j$$

$$\Omega = -0.06K$$

so plugging in we can evaluate $V_{A/B}$!

Follow procedure to obtain acceleration of A with respect to B!

$$\Omega = \frac{d\theta}{dt} \quad \text{or} \quad \Omega = \frac{V_B}{\rho} = \frac{15}{250} = 0.06$$

clockwise (so -ve)

B has constant acceleration

so

$\omega = \omega_0$

converting to radians

$$s = r\theta = 250\left(\frac{45}{360}.2\pi\right)$$

$$= 196.35 \text{ m}$$

from this equation of motion

$v^2 = v_0^2 + 2as$

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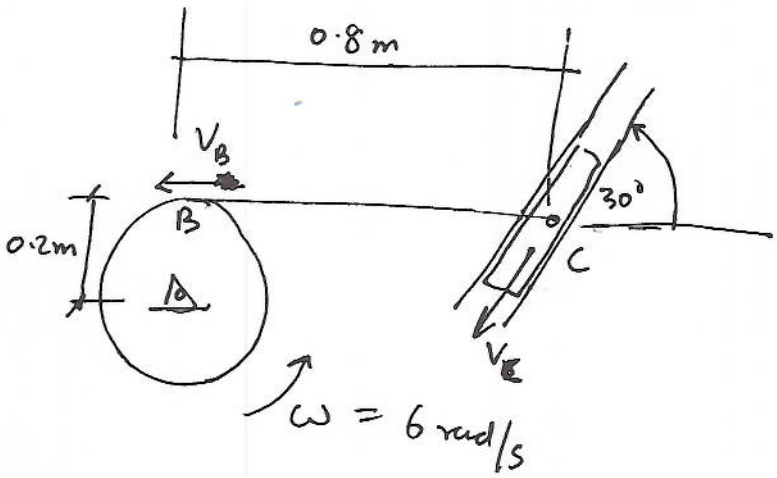
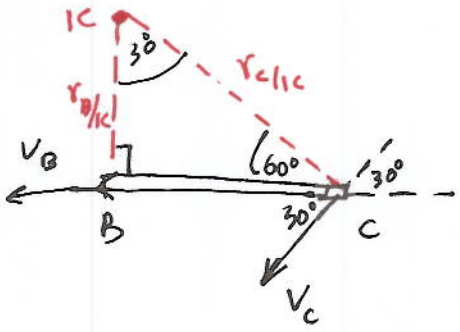


$$V_B = \omega r = 6(0.2) = 1.2 \text{ m/s}$$



$$\frac{r_{C/IC}}{0.8} = \quad 0.8 = r_{C/IC}\cos 60° \Rightarrow r_{C/IC} = 1.6 \text{ m}$$

so $\quad 1.6^2 = 0.8^2 + r_{B/IC}^2 \Rightarrow r_{B/IC} = 1.38 \text{ m}$

rotation about IC

$$V_B = \omega r_{C/IC} \Rightarrow \omega = \frac{V_C}{r_{C/IC}} = \frac{1.2}{1.38} = 0.87 \text{ rad/s}$$

This is the rotation of the bar BC, $\omega_{BC} = 0.87$ rad/s

so we can now find V_C;

$$V_C = \omega_{BC} r_{C/IC} = 0.87(1.6) = 1.39 \text{ m/s}$$