

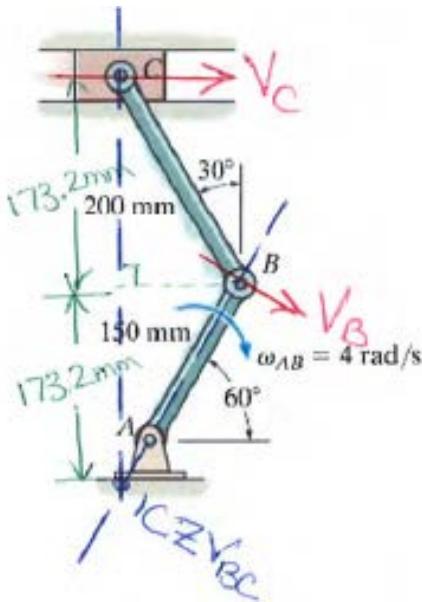
EGM 3420C - Engineering Mechanics

Dynamics Review Problems

Problem 4. Bar AB rotates at 4 rad/s in the clockwise direction as shown. Determine the velocity of point C.

From bar AB:

$$\begin{aligned} v_B &= \omega_{AB} r_{B/A} \\ &= (4)(150) \\ &= \underline{6000 \text{ mm/s}} \end{aligned}$$



From bar BC:

$$v_B = \omega_{BC} r_{B/C}$$

$$\omega_{BC} = \frac{v_B}{r_{B/C}}$$

$$\omega_{BC} = \frac{6000 \text{ mm/s}}{200 \text{ mm}}$$

$$\underline{\omega_{BC} = 3 \text{ rad/s}}$$

$$v_C = \omega_{BC} r_{C/C} = (3)(173.2 + 173.2) = 1039.2 \text{ mm/s}$$

using similar triangles
 $r_{B/C} = \text{length of bar BC}$
 $= 200 \text{ mm}$

Answer: $v_C = 1.039 \text{ m/s} \rightarrow$