dynamics explanation

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1   question A

$\vec{V_c} = \vec{V_a} + \omega * \vec{r_{c/a}}$

by using the cross-product we can find that

$$\vec{V_{cx}} = v_a - \omega * sin(30) = -1 \tag{1}$$

$$\vec{V_{cy}} = 0 - \omega * cos(30) = 4 * \sqrt{3} \tag{2}$$

$$V_c = \sqrt{48 + 1} = 7 \tag{3}$$