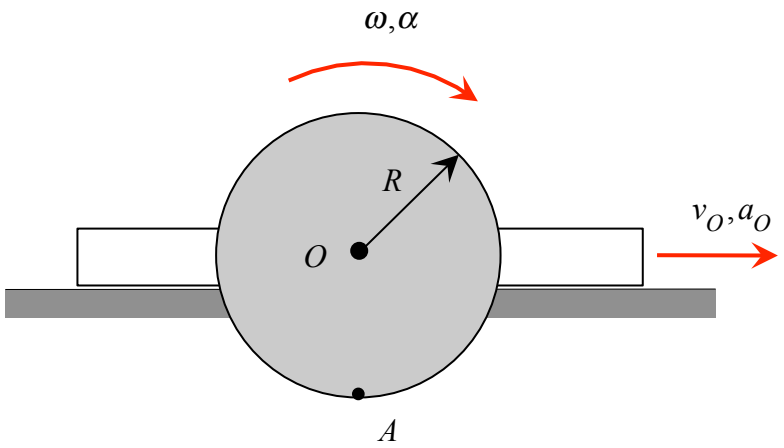
Homework H2.B

Given: A circular disk is pinned to a block at its center O, with the block being constrained to move along a horizontal surface. The angular velocity $\vec{\omega}$ and angular acceleration $\vec{\alpha}$ of the disk are in the directions shown in the figure. The block is moving the right with a speed of v_O and an acceleration of a_O. At the position shown, point A on the perimeter of the disk is directly below O.

Find: For this position, determine the velocity and acceleration of point A. Express your answers as vectors.



Use the following parameters in your analysis: $R = 0.75$ m, $\omega = 4$ rad/s, $\alpha = 2$ rad/s^2, $v_O = 3$ m/s and $a_O = 4$ m/s^2.