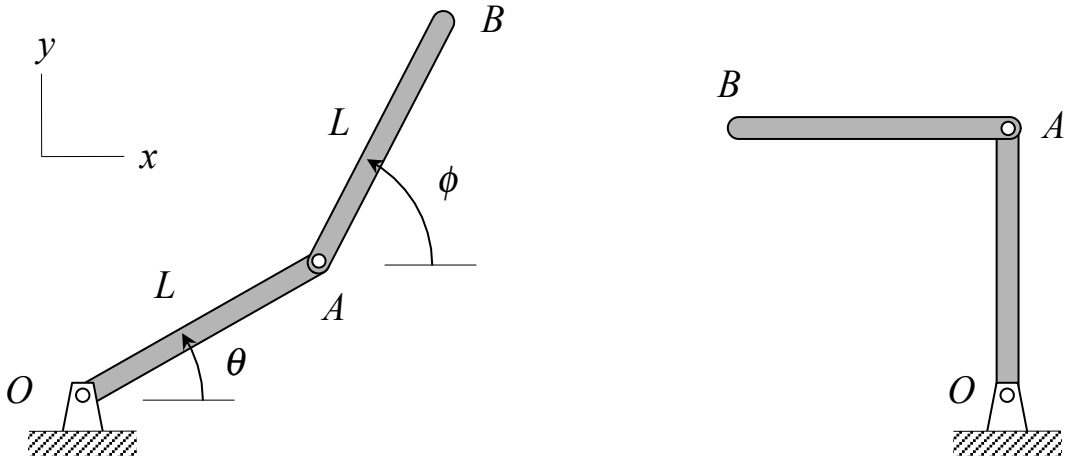
Homework 2.B

Given: A planar linkage is made up of links OA and AB, with the length of each link being L. OA is pinned to ground at end O, and AB is pinned to OA at end A. The angular orientations of the two links are given by the angles θ and ϕ, with both angles being measured from the fixed x-axis. At the linkage position shown below right ($\theta = 90°$ and $\phi = 180°$), the angular velocities and accelerations for the links are $\dot{\theta}$ and $\dot{\phi}$, and $\ddot{\theta}$ and $\ddot{\phi}$, respectively.

Find: Determine the velocity and acceleration for end B of AB for the position shown below right. Write your answers as vectors.



Use the following parameters in your analysis: $L = 2$ m, $\dot{\theta} = 2$ rad/s, $\dot{\phi} = 4$ rad/s, $\ddot{\theta} = 0$ and $\ddot{\phi} = 3$ rad/s^2.

