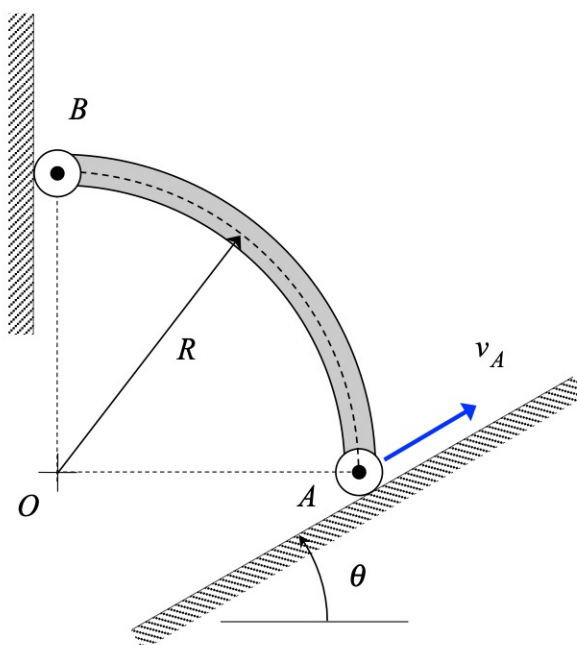


**Homework H.2.C**

**Given:** Rigid body AB is shaped as quarter-circle arc with a radius of  $R$ . End B of the bar is constrained to move along a vertical wall, whereas end A moves along an incline at an angle of  $\theta = 53.13^\circ$  with respect to the horizontal. At the instant shown, the center O of the AB arc is directly below end B, and end A moves with a constant speed of  $v_A$ .

**Find:** For this problem:

- Determine the velocity and acceleration of end B of the bar. Express your answers as vectors and in terms of the parameters of  $v_A$  and  $R$ .
- Is the speed of B increasing, decreasing or constant?

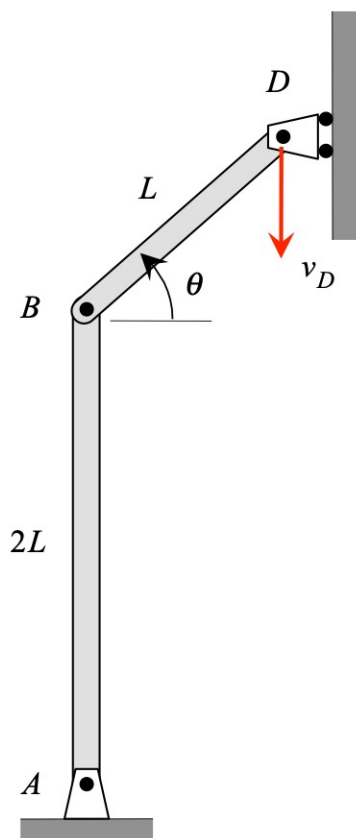


**Homework H.2.D**

**Given:** Roller D of the mechanism shown is moving downward along a straight vertical surface with a constant speed of  $v_D$ . At the instant shown, link AB is vertical.

**Find:** For this position:

- Determine the angular velocities of links AB and BD. Write your answers as vectors.
- Determine the angular accelerations of links AB and BD. Write your answers as vectors.



Use the following parameters in your analysis:  $\theta = 53.13^\circ$ ,  $L = 2$  m and  $v_D = 15$  m/s.