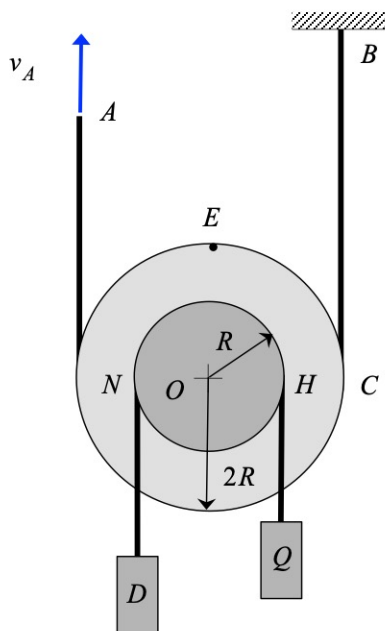


**Homework H.2.E**

**Given:** Cable AB is wrapped around the outer perimeter of a stepped disk. End A of the cable is given a constant upward speed of  $v_A$ , and end B is connected to fixed ground. A second cable DQ is wrapped around the inner perimeter of the stepped disk. Blocks D and Q are attached to ends D and Q, respectively, of this cable. Assume that the cables do not slip on the disk as the system moves.

**Find:** For this problem:

- Determine the speeds of blocks D and Q. Leave your answers in terms of  $v_A$ .
- Determine the velocity of point E on the outer perimeter of the disk when E is directly above the center O of the disk. Write your answers as vectors. Leave your answers in terms of  $R$  and  $v_A$ .
- Show the velocity vectors of D, Q and point E in a sketch of the system.

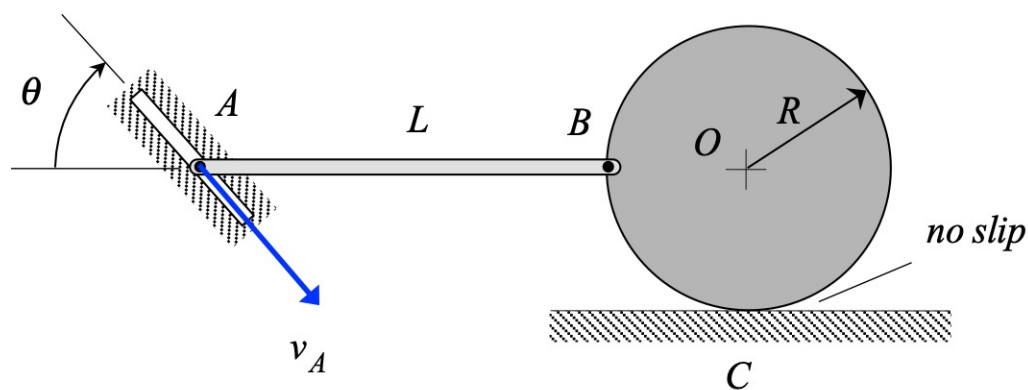


**Homework H.2.F**

**Given:** Rigid bar AB is constrained to move along an angled slot at end A. A circular disk with an outer radius of  $R$  is able roll without slipping on a rough, horizontal floor. Bar AB is pinned to disk at point B on the perimeter of the disk. Pin A is known to move with a constant speed of  $v_A$  in the slot. At the position shown, bar AB is horizontal

**Find:** For position shown:

- Determine the angular velocities of link AB and of the disk. Write your answers as vectors
- Determine the angular accelerations of link AB and of the disk. Write your answers as vectors



Use the following parameters in your analysis:  $R = 2$  ft,  $L = 6$  ft,  $v_A = 10$  ft/s and  $\theta = 36.87^\circ$ .