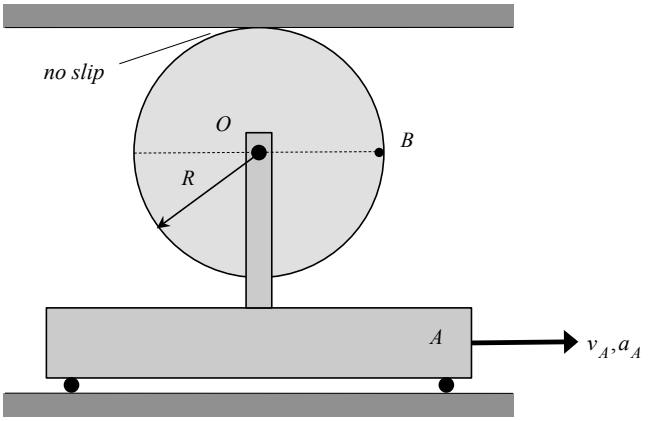
Homework H2.E

Given: Cart A moves to the right with a speed of v_A and an acceleration a_A. A disk of radius R is attached to a shaft on the cart at the center O of the disk. The disk is in contact with a horizontal surface at its top surface; as the cart moves, the disk rolls without slipping on this horizontal surface.

Find: For this problem:

(a) Determine the angular velocity and angular acceleration of the disk. Write your answers as vectors.

(b) Determine the acceleration of point B on the circumference of the disk and with B being immediately to right of O at the instant shown.



Use the following parameters in your analysis: $R = 2$ ft, $v_A = 4$ ft/s and $a_A = 5$ ft/s^2.