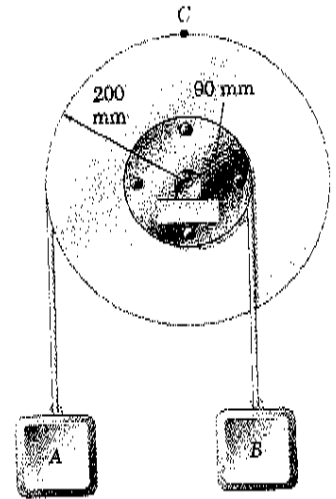
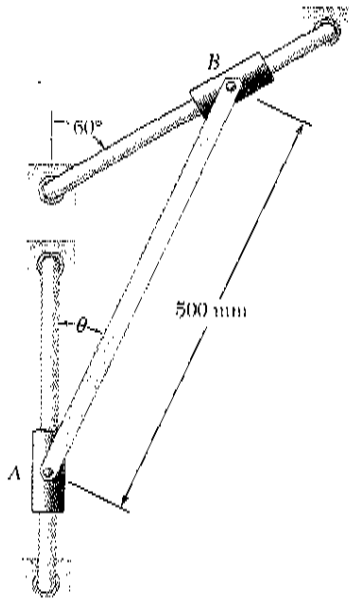


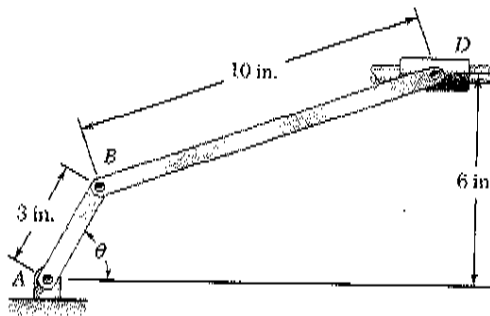
1 Two blocks and a pulley are connected by inextensible cords as shown in Fig. P15.30 and P15.31. Block A has a constant acceleration of 75 mm/s^2 and an initial velocity of 120 mm/s , both directed downward. Determine (a) the number of revolutions executed by the pulley in 6 s, (b) the velocity and position of block B after 6 s, (c) the acceleration of point C on the rim of the pulley at $t = 0$.



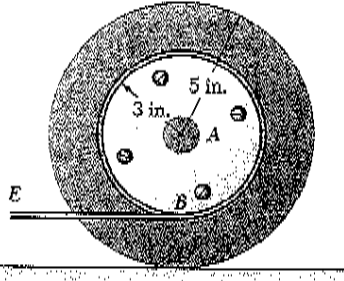
2 Collar A moves upward with a constant velocity of 1.2 m/s . At the instant shown when $\theta = 25^\circ$, determine (a) the angular velocity of rod AB, (b) the velocity of collar B.



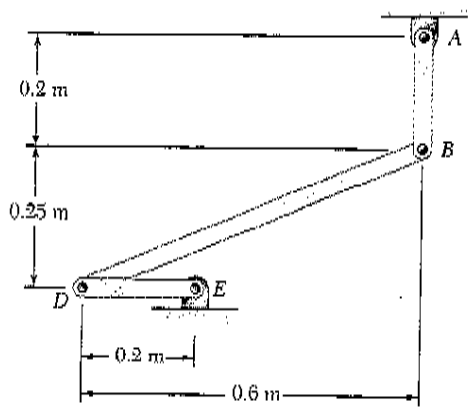
3 Knowing that crank AB has a constant angular velocity of 160 rpm counterclockwise, determine the angular velocity of rod BD and the velocity of collar D when (a) $\theta = 0$, (b) $\theta = 90^\circ$.



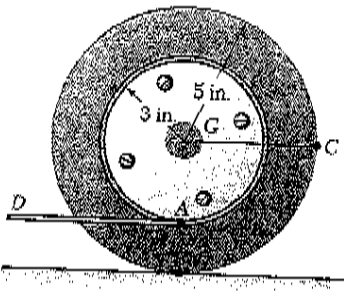
4 A 3-in.-radius drum is rigidly attached to a 5-in.-radius drum as shown. One of the drums rolls without sliding on the surface shown, and a cord is wound around the other drum. Knowing that end E of the cord is pulled to the left with a velocity of 6 in./s, determine (a) the angular velocity of the drums, (b) the velocity of the center of the drums, (c) the length of cord wound or unwound per second.



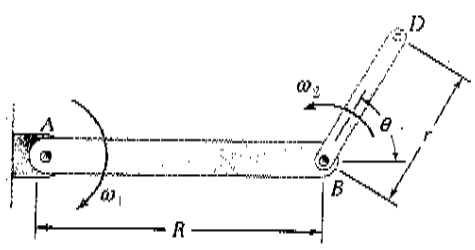
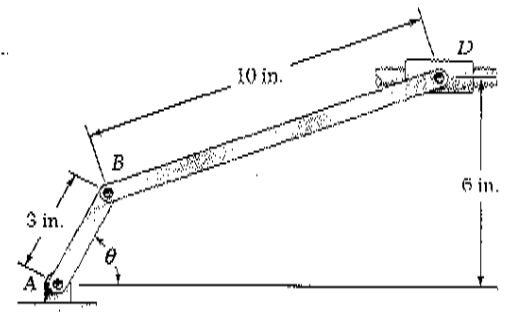
5 Knowing that at the instant shown the angular velocity of rod AB is 15 rad/s clockwise, determine (a) the angular velocity of rod BD , (b) the velocity of the midpoint of rod BD .



6 A 3-in.-radius drum is rigidly attached to a 5-in.-radius drum as shown. One of the drums rolls without sliding on the surface shown, and a cord is wound around the other drum. Knowing that at the instant shown end D of the cord has a velocity of 8 in./s and an acceleration of 30 in./s^2 , both directed to the left, determine the accelerations of points A , B , and C of the drums.



7 Arm AB has a constant angular velocity of 16 rad/s counterclockwise. At the instant when $\theta = 0$, determine the acceleration (a) of collar D , (b) of the midpoint G of bar BD .



8 Rod AB of length $R = 15 \text{ in.}$ rotates about A with a constant clockwise angular velocity ω_1 of 5 rad/s . At the same time, rod BD of length $r = 8 \text{ in.}$ rotates about B with a constant counterclockwise angular velocity ω_2 of 3 rad/s with respect to rod AB . Knowing that $\theta = 60^\circ$, determine for the position shown the acceleration of point D .

9 Knowing that at the instant shown the rod attached at B rotates with a constant counterclockwise angular velocity ω_B of 6 rad/s , determine the angular velocity and angular acceleration of the rod attached at A .

