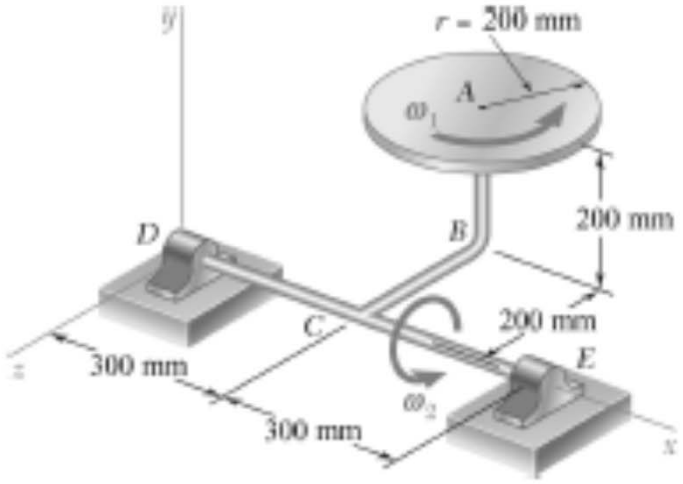
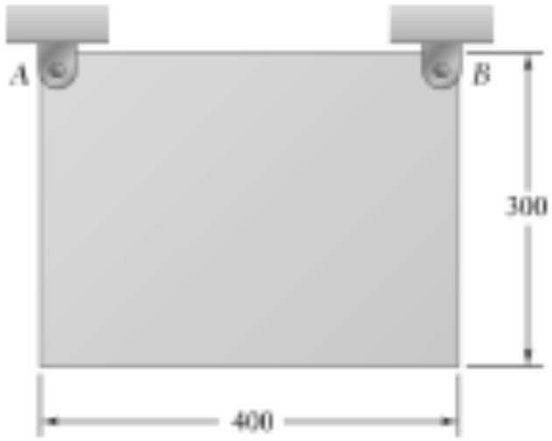
Set 10 C: No submission required



PROBLEM 18.42

Determine the kinetic energy of the disk of Problem 18.4.

$$T = 16.32 \text{ N} \cdot \text{m}$$

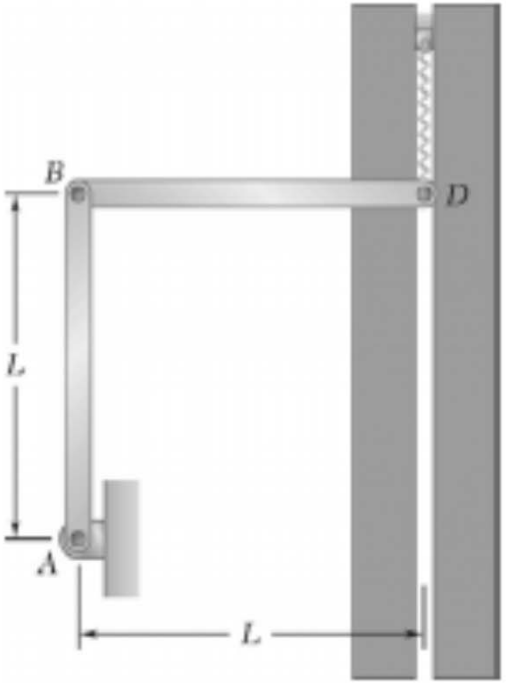


PROBLEM 17.137

A 300×400 mm-rectangular plate is suspended by pins at A and B. The pin at B is removed and the plate swings freely about pin A. Determine (*a*) the angular velocity of the plate after it has rotated through 90°, (*b*) the maximum angular velocity attained by the plate as it swings freely.

$\omega_2 = 3.43$ rad/s ◀

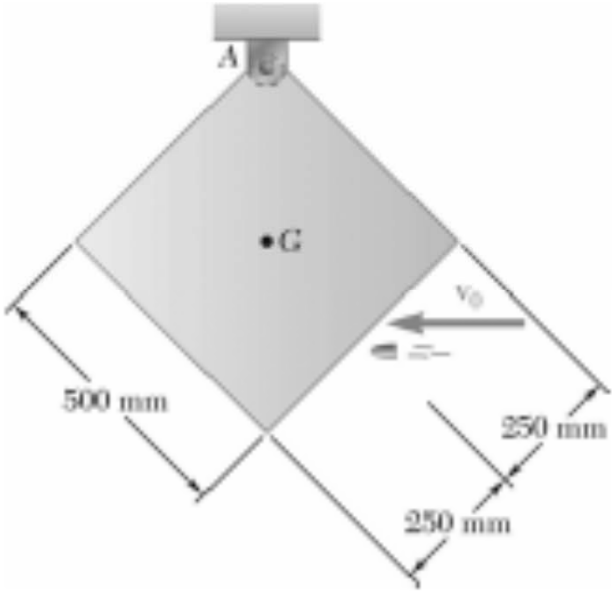
$\omega_3 = 4.85$ rad/s ◀



PROBLEM 17.42

Each of the two rods shown is of length $L = 1$ m and has a mass of 5 kg. Point D is connected to a spring of constant $k = 20$ N/m and is constrained to move along a vertical slot. Knowing that the system is released from rest when rod BD is horizontal and the spring connected to Point D is initially unstretched, determine the velocity of Point D when it is directly to the right of Point A.

$$\mathbf{v}_D = 2.69 \text{ m/s} \downarrow$$



PROBLEM 17.141

A 35-g bullet B is fired horizontally with a velocity of 400 m/s into the side of a 3-kg square panel suspended from a pin at A. Knowing that the panel is initially at rest, determine the components of the reaction at A after the panel has rotated 45°.

$$\mathbf{A}_x = 189.7\ \text{N} \rightarrow \blacktriangleleft$$

$$\mathbf{A}_y = 7.36\ \text{N} \uparrow \blacktriangleleft$$