Due on Tuesday 13-11-1429 / 11-11-2008 **(any time)**
Deadline for submission: **Wednesday 14-11-1429 / 12-11-2008 (before you sit in class)**

1- As shown in Fig. P1, the 100-lb slider at A is held in place on the smooth circular bar by the cable AB. The circular bar is contained in the x-y plane. [Sec. 3.4] (20 pts.)
      (a) Determine the tension in the cable.
      (b) Determine the normal force exerted on the weight by the bar.

2- The force F, shown in Fig. P2, exerts a 200 ft-lb counterclockwise moment about A and a 100 ft-lb clockwise moment about B. What are F and θ? [Sec. 4.1] (15 pts.)

3- (i)   Determine the moment of the 80-N force shown in Fig. P3 about the origin O by using [Secs. 4.1 - 4.4] (20 pts.)

      (a)   the scalar method,
      (b)   the cross product, letting **r** be the vector from O to A,
      (c)   the cross product, letting **r** be the vector from O to B.
  (ii)   What is the two-dimensional description of the moment?

4- The tension in cable AB, shown in Fig. P4, is 150 N. The tension in cable AC is 100 N. Determine the sum of the moments about D due to the forces exerted on the wall by the cables by
      (a) using the vector **DA** for both forces,
      (b) using the vector **DB** for T_{AB} and the vector **DC** for T_{AC},
      (c) first finding the resultant force, **R**, then finding **M** of **R**.
  Compare the results and comment. [Secs. 4.1 - 4.4] (25 pts.)

5- The tension in cable AB, shown in Fig. P5, is 80 lb. What is the moment about the line CD due to the force exerted by the cable on the wall at B? [Sec. 4.5] (20 pts.)
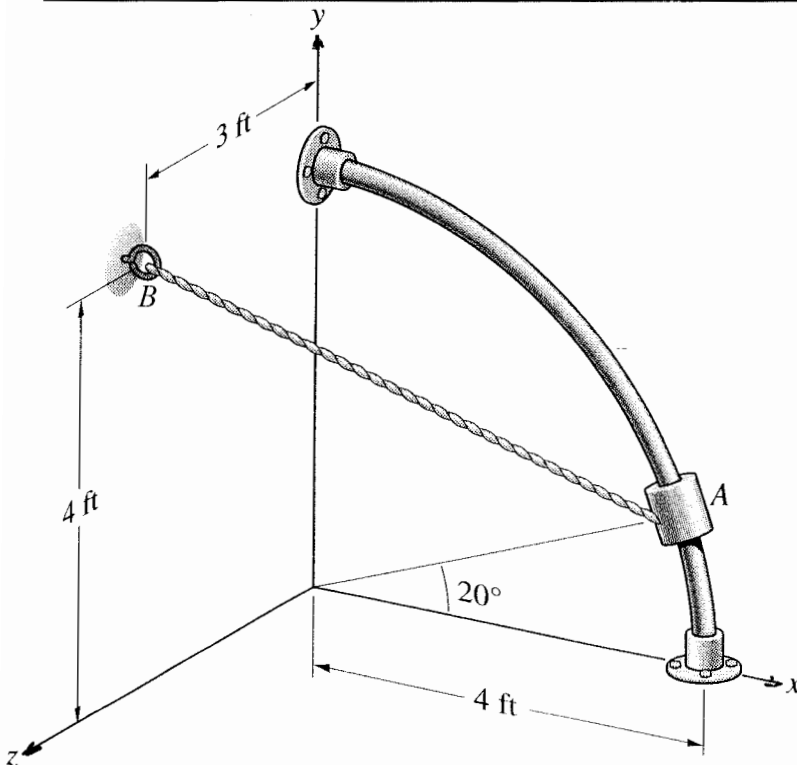   **Solve the problem four times by using four different position vectors**, and compare your answers.
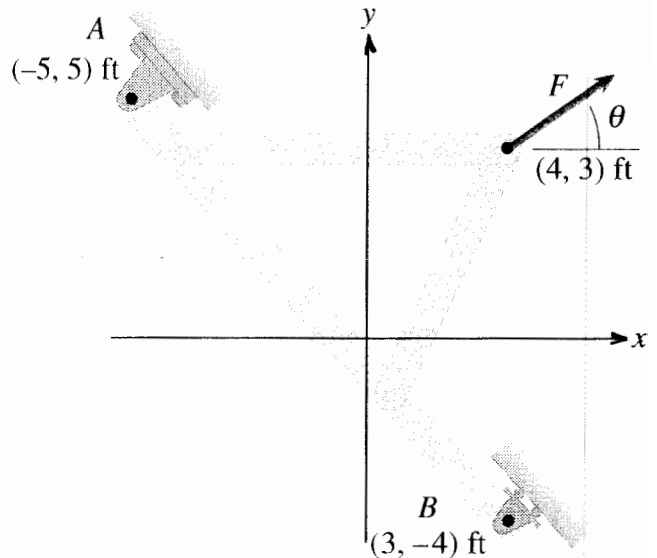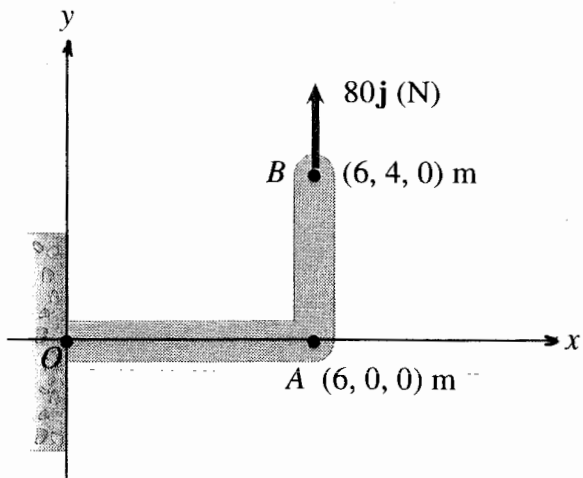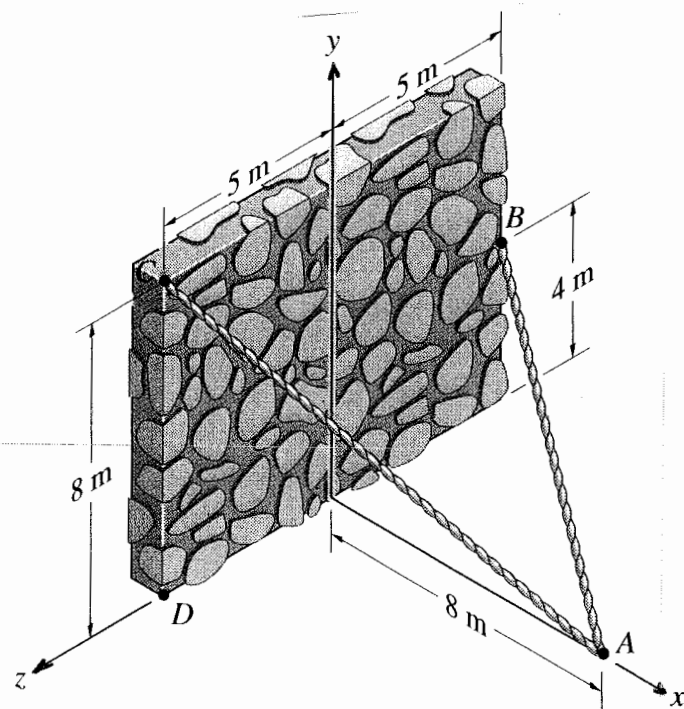

Fig. P1

Fig. P2

Fig. P3

$80\mathbf{j}$ (N)

B (6, 4, 0) m

O

A (6, 0, 0) m

Fig. P4

5 m

5 m

B

4 m

8 m

D

8 m

A

Fig. P5

8 ft

3 ft

B

6 ft

D

A (6, 0, 10) ft