CE 201 STATICS (Sections 3 & 4)

First Semester 1430-31 / 2009-10 (**091**)

H.W. # 2

Due on Sunday 29-10-1430 / 18-10-2009 (**any time**)

Deadline for submission: **Monday 30-10-1430 / 19-10-2009** (**before** you sit in class)

1- The straight line from the head of **F** to point A, shown in Fig. P1, is parallel to the y axis, and point A is contained in the x-z plane. The x component of **F** is $F_x = 100$ N.   [Secs. 2.7 & 2.8] (15 pts.)
   (a) What is the magnitude of **F**?
   (b) Determine the angles θ_x, θ_y, and θ_z between **F** and the positive coordinate axes.

2- Consider the cables and wall shown in Fig. P2. Cable AB exerts a 200-lb force $\mathbf{F}_{AB}$ at point A that is directed along the line from A to B. The cable AC exerts a 100-lb force $\mathbf{F}_{AC}$ at point A that is directed along the line from A to C. Determine the magnitude of the total force exerted at point A by the two cables.   [Secs. 2.7 & 2.8] (20 pts.)

3- The 70-m-tall tower, shown in Fig. P3, is supported by three cables that exert forces $\mathbf{F}_{AB}$, $\mathbf{F}_{AC}$, and $\mathbf{F}_{AD}$ on it. The magnitude of the force $\mathbf{F}_{AB}$ is 2 kN. The x and z components of the vector sum of the forces exerted on the tower by the three cables are zero. What are the magnitudes of $\mathbf{F}_{AC}$, and $\mathbf{F}_{AD}$?   [Secs. 2.7 & 2.8] (25 pts.)

4- The ship O, shown in Fig. P4, measures the positions of the ship A and the airplane B and obtains the coordinates stated. What is the angle θ between the lines of sight OA and OB?   [Sec. 2.9] (15 pts.)

5- The force **F** in cable OA, shown in Fig. P5, has a magnitude of 50 N. What are the components of **F** parallel and normal to the cable OB?   [Sec. 2.9] (25 pts.)
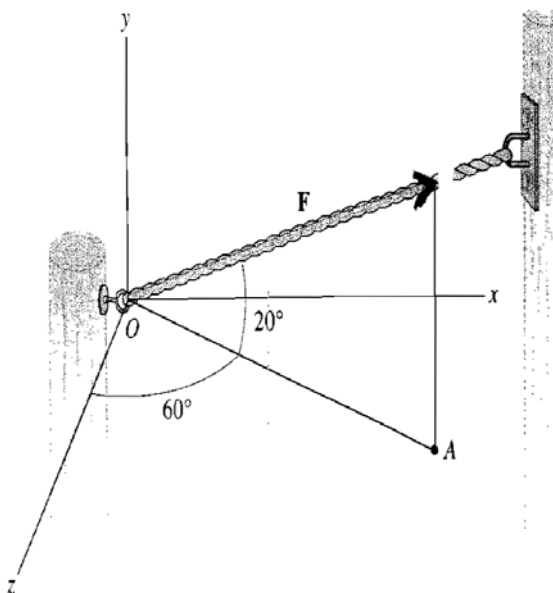

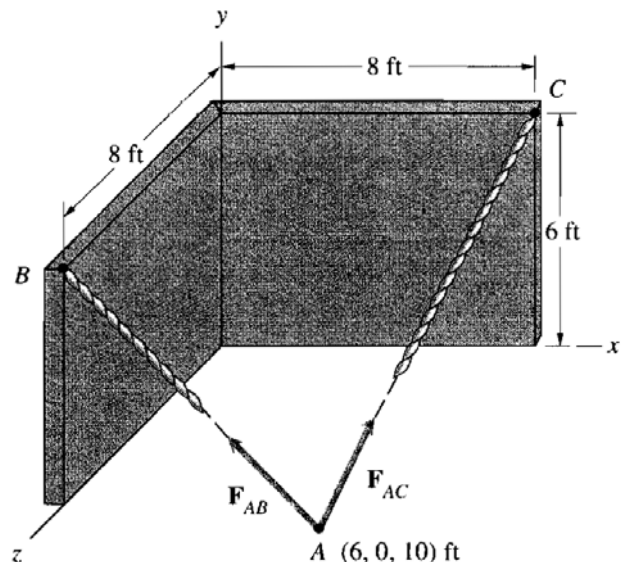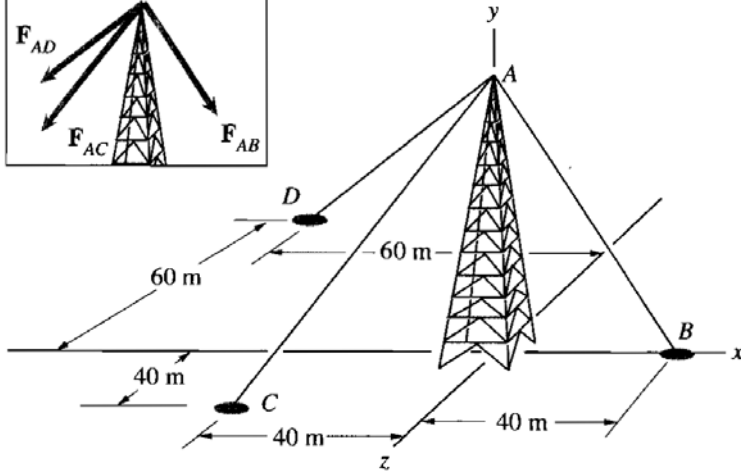

Fig. P1

Fig. P2

Fig. P3

Fig. P4

A

$(6, 6, -3)$ m

F

x

$(10, -2, 3)$ m

B

O

z

Fig. P5

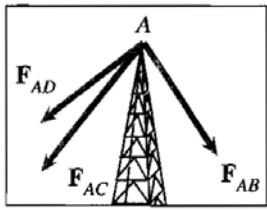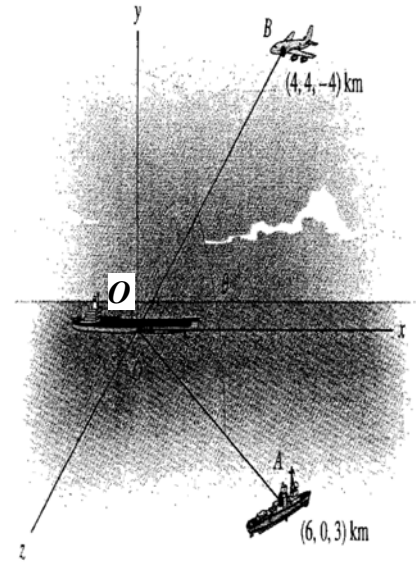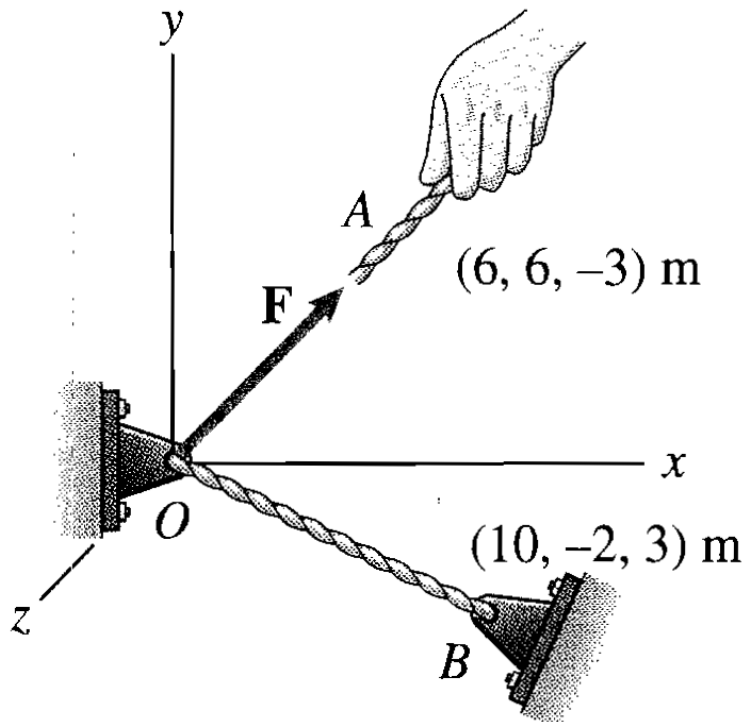**Do your work _yourself_!! Remember that the homework carries more than 10% of the course grade; in addition,** _solving it is the best way to understand the subject._ _Of course, you can seek my help anytime in the homework as well as in anything else._

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As an **engineer**, **review the guidelines for submitting homework assignments given to you in class BEFORE you start solving and writing the homework. FOLLOW _ALL_ THESE GUIDELINES.** _Cheating, copying, etc. is ....!!!!!!_