

King Fahd University of Petroleum & Minerals
CIVIL ENGINEERING DEPARTMENT

CE 201 STATICS (Sections 3 & 4)

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

H.W. # 4

Due on Sunday 13-11-1430 / 1-11-2009 (any time)

Deadline for submission: **Monday 14-11-1430 / 2-11-2009 (before you sit in class)**

- 1- For safety in the bulldozer shown in Fig. P1, the site engineer doesn't want to subject any of the cables to a tension larger than 5 kip. Based on this criterion, what is the largest force parallel to the x axis the bulldozer can apply at A ? Take advantage of the solution of problem # 5 in HW # 3 such that you do not need to repeat some of the steps there. Just copy the vectors. [Sec. 3.4] (20 pts.)
- 2- The metal disk A , shown in Fig. P2, weighs 10 lb. It is held in place at the center of the smooth inclined surface by the strings AB and AC . What are the tensions in the strings? [Sec. 3.4] (25 pts.)
- 3- The weight $W = 300$ lb is shown in Fig. P3. The sum of the moments about O due to the weight W and the force exerted on the bar OA by the cable AB is zero. What is the tension in the cable? [Sec. 4.1] (10 pts.)
- 4- The 20-kg mass, shown in Fig. P4, is suspended by cables attached to three vertical 2-m posts. Point A is at $(0, 1.2, 0)$ m. Determine the moment about the base E due to the force exerted on the post BE by the cable AB . [Secs. 4.2 - 4.4] (20 pts.)
- 5- The rectangular plate, shown in Fig. P5, is supported by brackets at A and B and by a wire CD . Knowing that the tension in the wire is 200 N, determine the moment about A of the force exerted by the wire on point C . [Secs. 4.2 - 4.4] (25 pts.)

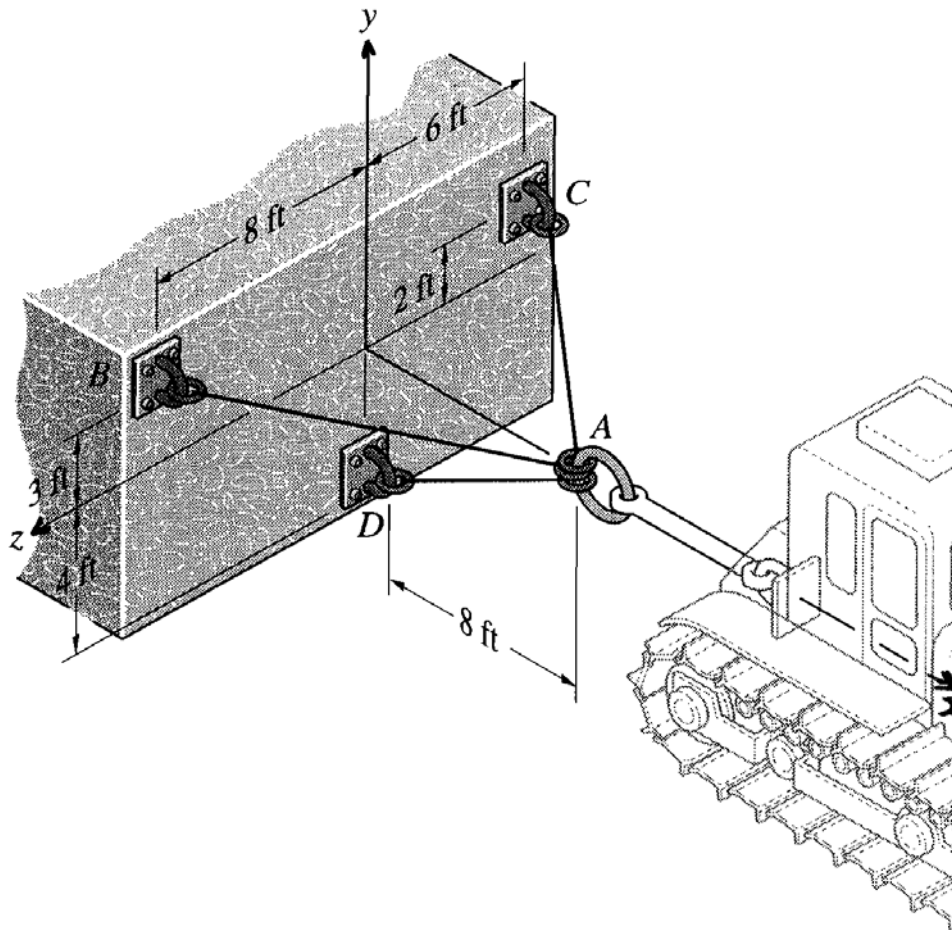


Fig. P1

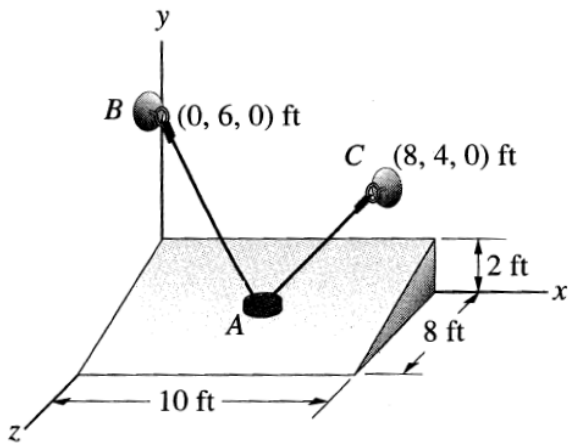


Fig. P2

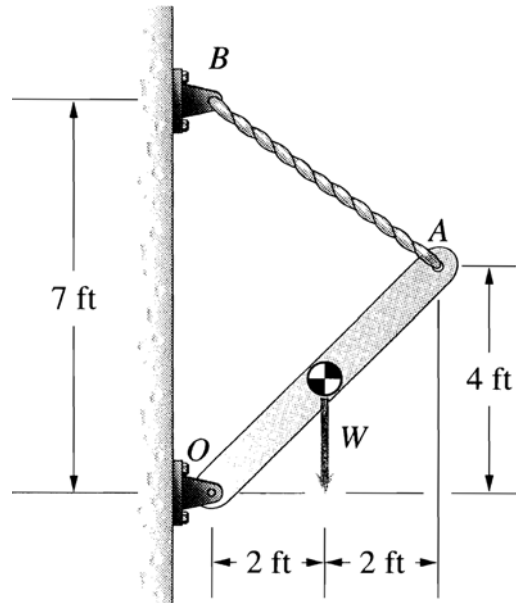


Fig. P3

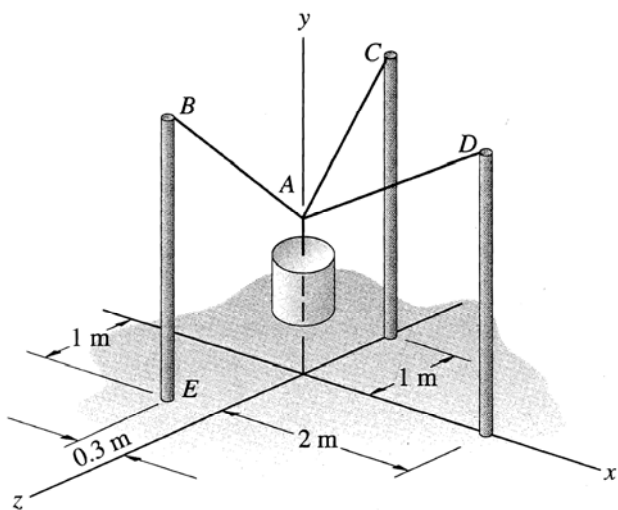


Fig. P4

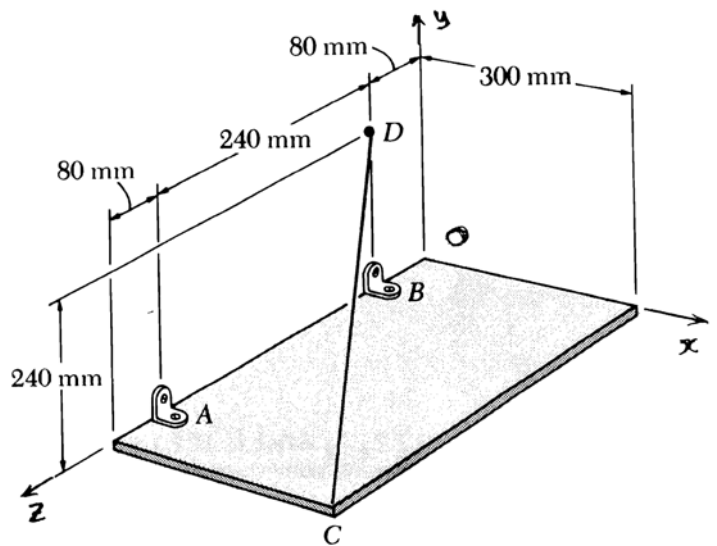


Fig. P5

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.

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!!!!!!