

CE 201 STATICS (Sections 4 & 6)

First Semester 1429-30 / 2008-09 (081)

H.W. # 7

**Due** on Sunday 16-12-1429 / 14-12-2008 (any time)

**Deadline** for submission: **Monday 17-12-1429 / 15-12-2008 (before you sit in class)**

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- 1- The airplane, shown in Fig. P1, is at rest on the ground ( $z = 0$  is ground level). Its landing gear are at points  $A$ ,  $B$ , and  $C$ . The coordinates of the point  $G$  where the 350-kip weight of the plane acts are  $(10, 1.5, -15)$  ft. What are the magnitudes of the normal reactions exerted by the ground on the plane's landing gear? [Secs. 5.5 - 5.7] (15 pts.)
  - 2- As shown in Fig. P2, an engineer designs a system of pulleys to pull his model trains up and out of the way when they aren't in use. What are the tensions in the three ropes when the system is in equilibrium? [Secs. 5.5 - 5.7] (20 pts.)
  - 3- The boom  $AB$  shown in Fig. P3 is subjected to a downward force  $F$  at  $B$  and is supported by a ball-and-socket support at  $A$  and two cables  $CD$  and  $CE$ . Determine the maximum force  $F$  which can be applied if the maximum allowable tension in any cable is 5000 lb. [Secs. 5.5 - 5.7] (20 pts.)
  - 4- The plate shown in Fig. P4 is supported by hinges at  $A$  and  $B$  and the rope  $CE$  and is loaded by the force at  $D$ . The hinges are properly aligned, thus they do not exert couples on the plate, and the hinge at  $B$  is smooth and does not exert a force parallel to the hinge axis. Determine all reactions. [Secs. 5.5 - 5.7] (30 pts.)
  - 5- The bar  $ABC$ , shown in Fig. P5, is supported by ball-and-socket supports at  $A$  and  $C$  and the cable  $BD$  and is loaded by the 200-lb suspended weight. What is the tension in cable  $BD$ ? [Secs. 5.5 - 5.7] (15 pts.)
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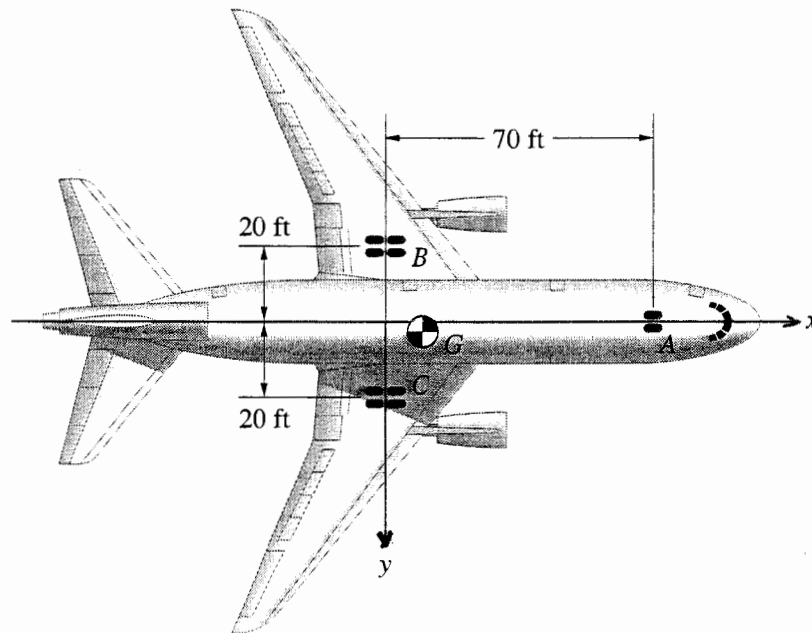


Fig. P1

Fig. P2

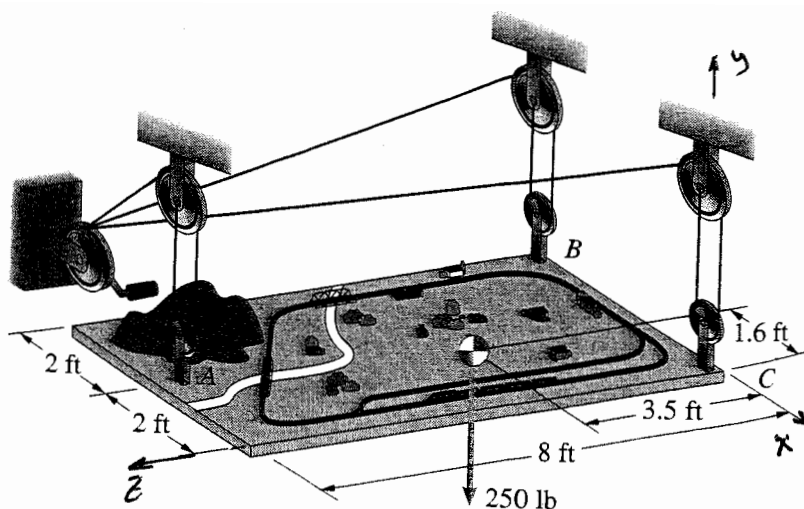


Fig. P3

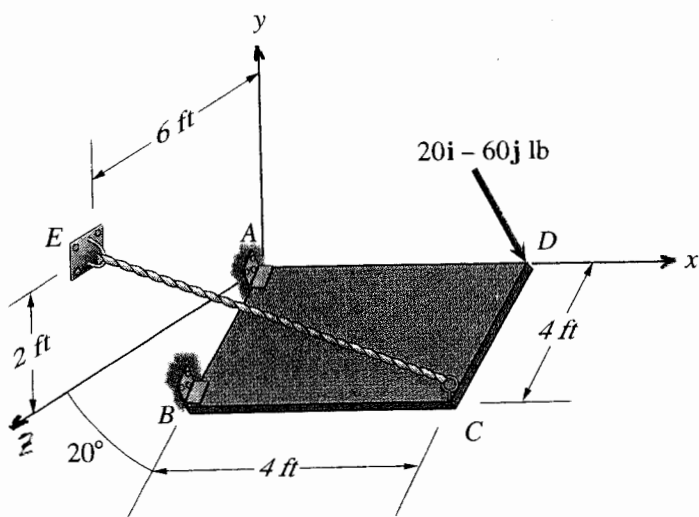
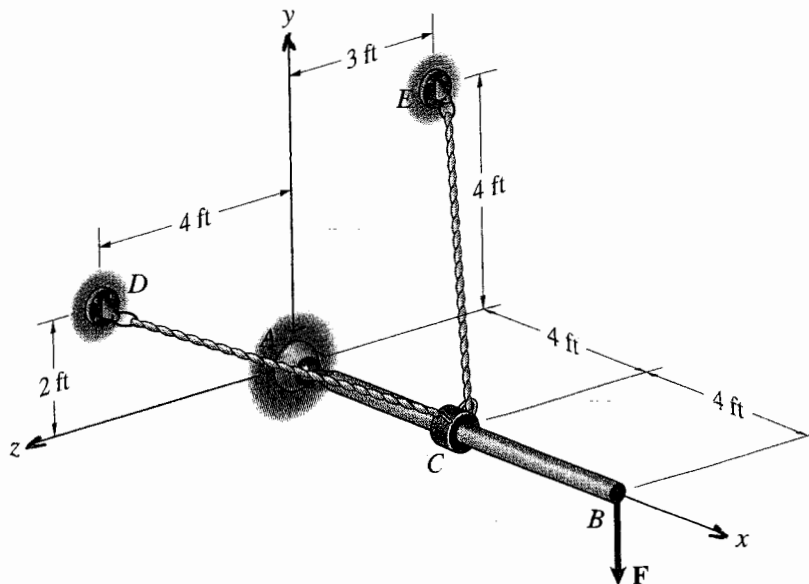


Fig. P4

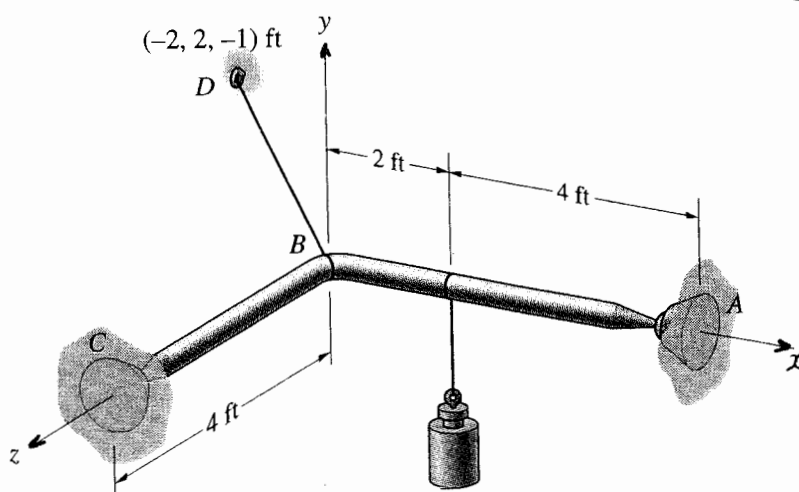


Fig. P5

**Do your work *yourself*!!** Remember that the homework carries about 15% 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 starting to do your homework. FOLLOW ALL THESE GUIDELINES