

King Fahd University of Petroleum & Minerals  
CIVIL ENGINEERING DEPARTMENT

CE 201 STATICS (Sections 4 & 5)

First Semester 1428-29 / 2007-08 (071)

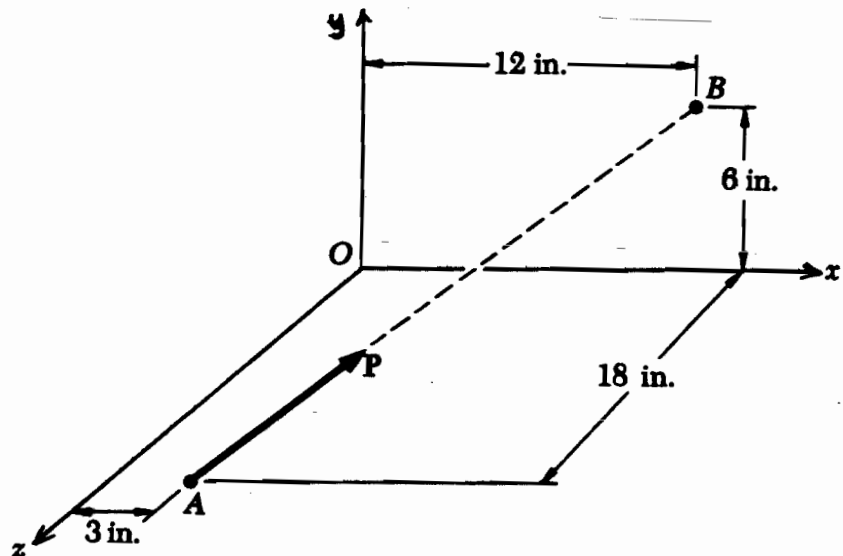
H.W. # 4

**Due** on Tuesday 11-10-1428 / 23-10-2007 (any time)

**Deadline** for submission: **Wednesday 12-10-1428 / 24-10-2007 (before you sit in class)**

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- 1- In addition to the 15.60-kN force shown in Fig. P1, a force  $P$  is applied at  $D$  in a direction parallel to the  $y$  axis. Determine the required magnitude and sense of  $P$  if the tension in cable  $CD$  is to be zero. [Sec. 3.4] (20 pts.)
- 2- In Fig. P2 shown, compute the moment of the 100-lb force about  $A$ ,  
a- by using the definition of the moment of a force,  
b- by resolving the force into horizontal and vertical components,  
c- by resolving the force into components along  $AB$  and in the direction perpendicular to  $AB$ . [Sec. 4.1] (20 pts.)
- 3- The line of action of the force  $P$  of magnitude 420 lb passes through the two points  $A$  and  $B$  as shown in Fig. P3.  
a- Compute the moment of  $P$  about  $O$  using the position vector  
i) of point  $A$   
ii) of point  $B$   
b- Determine the perpendicular distance from the line of action of  $P$  to the origin  $O$ . [Secs. 4.2 - 4.4] (20 pts.)
- 4- A force  $Q$  of magnitude 450 N is applied at point  $C$  as shown in Fig. P4. Determine the moment of  $Q$  about  
a- the origin of coordinates  
b- point  $D$ . [Secs. 4.2 - 4.4] (20 pts.)
- 5- The rectangular plate  $ABCD$  shown in Fig. P5 is held by hinges along its edge  $AD$  and by the wire  $BE$ . Knowing that the tension in the wire is 546 N, determine the moment about  $AD$  of the force exerted by the wire at point  $B$ . [Sec. 4.5] (20 pts.)

Fig. P3



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**Do your work yourself!!** Remember that the homework carries 20% 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. **DO NOT SUBMIT THE HOMEWORK IF YOU DO NOT FOLLOW THESE GUIDELINES.** Cheating, copying, etc. is .....!!!!!!

Fig. P1

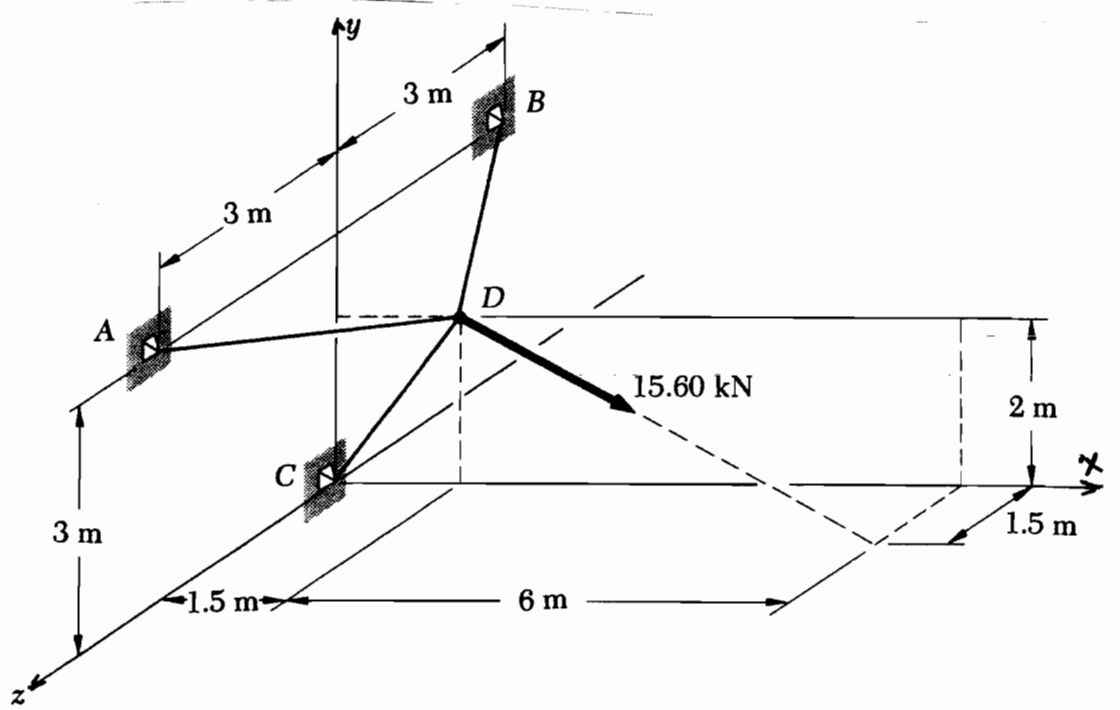


Fig. P2

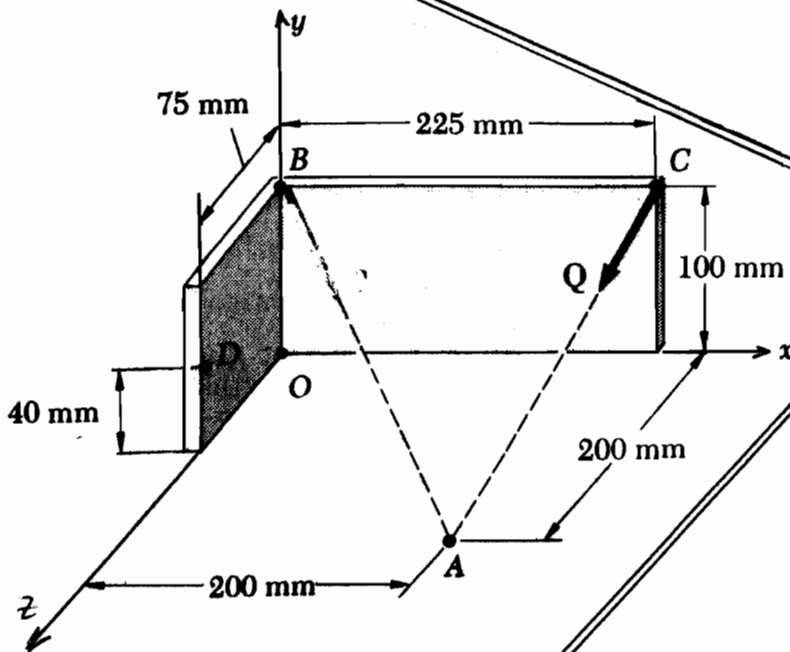
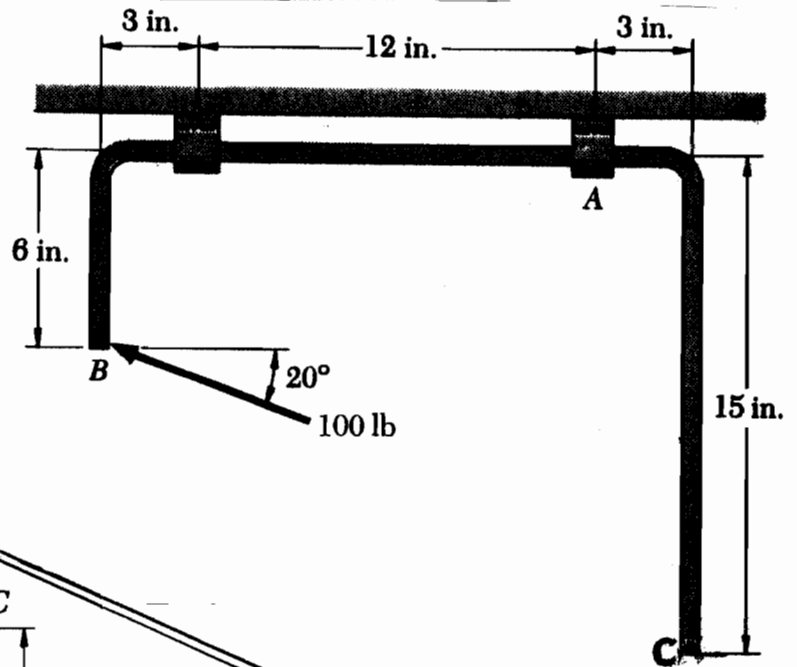


Fig. P4

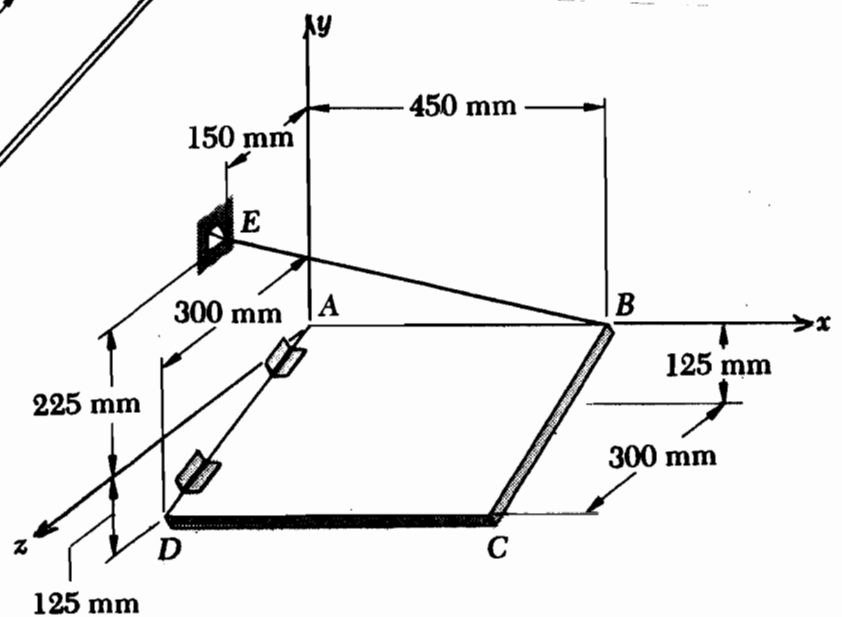


Fig. P5