NOTE: Only problems 4.106 and 4.113 will be marked.

Problem 1 (Problem 4.66)

Determine the reactions at *B* and *D* when *b* = 60 mm.

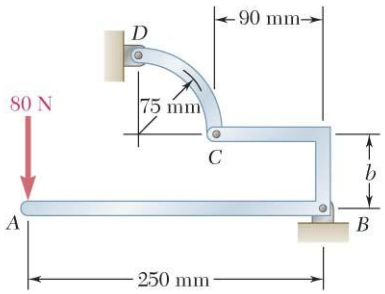

Fig. 1

Problem 2 (Problem 4.92)

Two tape spools are attached to an axle supported by bearings at *A* and *D*. The radius of spool *B* is 30 mm and the radius of spool *C* is 40 mm. Knowing that T_B = 80 N and that the system rotates at a constant rate, determine the reactions at *A* and *D*. Assume that the bearing at *A* does not exert any axial thrust and neglect the weights of the spool and axle.

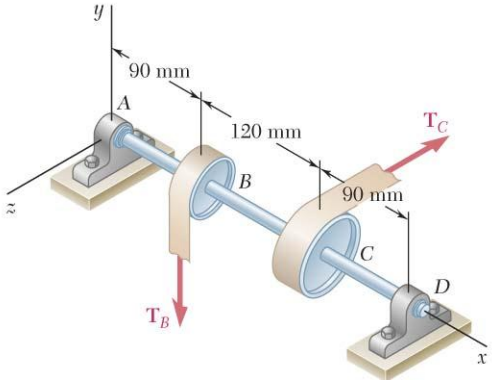

Fig. 2

Problem 3 (Problem 4.106)

A 2.4-m boom is held by a ball-and-socket join at *C* and by two cables *AD* and *AE*. Determine the tension in each cable and the reaction at *C*.

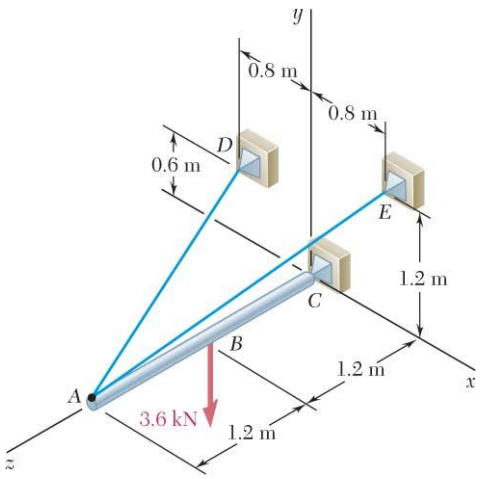

Fig. 3

Problem 4 (Problem 4.113)

A 20-kg cover for a roof opening is hinged at corners *A* and *B*. The roof forms an angle of 30˚ with the horizontal, and the cover is maintained in a horizontal position by the brace *CE*. Determine:

(a) The magnitude of the force exerted by the brace,

(b) The reactions at the hinges.

Assume that the hinge at *A* does not exert any axial thrust.

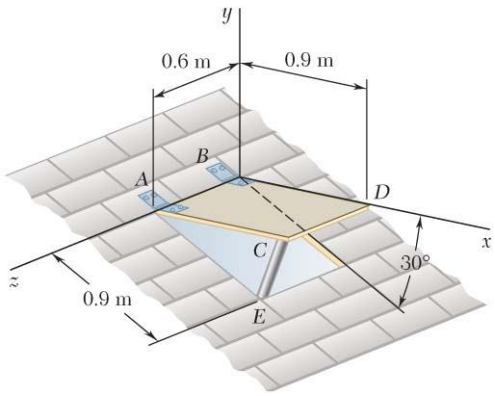

Fig. 4