Prob. 1 (4.62)

Eight identical 20 × 30-in. rectangular plates each weighing 50 lb are held in a vertical plane as shown. All connections consist of frictionless pins, rollers, or short links. For each case, determine whether (a) the plate is completely, partially, or improperly constrained, (b) the reactions are statically determinate or indeterminate, (c) the equilibrium of the plate can be maintained in the position shown.

Prob. 2 (4.94)

A uniform slender rod of length 2L and weight W is in an equilibrium condition. Knowing that \( L = 8 \text{ in.} \), determine (a) the angle \( \theta \), (b) the length \( a \).

Prob. 3 (4.116)

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

Prob. 4 (4.136)

Three rods of lengths \( a = 9 \text{ in.}, b = 6 \text{ in.}, \) and \( c = 12 \text{ in.} \) are welded together to form the component shown. The component is supported by eyebolts at A and C and by a shallow slot cut in a block at B. Neglecting friction, determine the reactions at A, B, and C when \( P = 40 \text{ lb}, \ M_A = 36 \text{ lb-ft}, \) and \( M_C = 0 \).