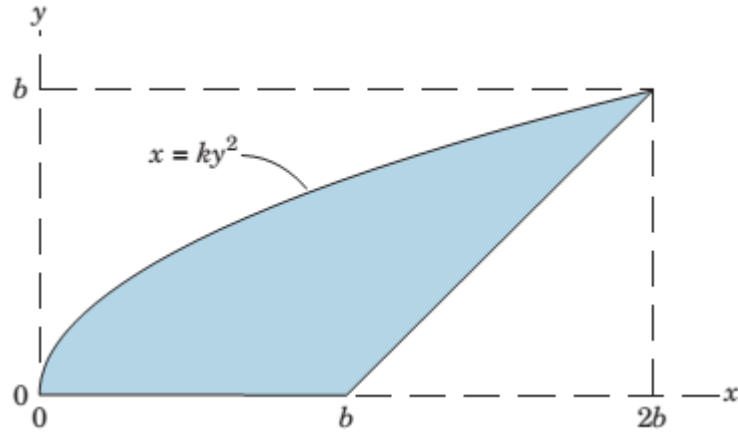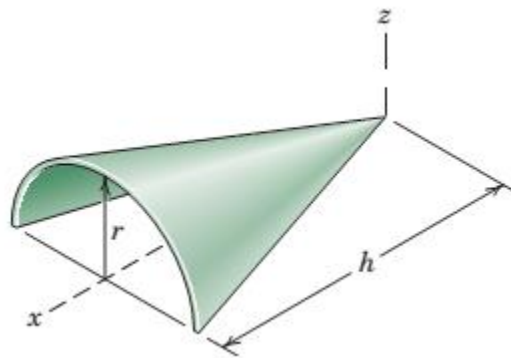**Problem 1.** Locate the centroid of the shaded area.

Problem 2. Determine the position of the center of mass of the homogeneous thin conical shell shown.

Problem 3. A small Ferris wheel is constructed of two identical trusses, one of which is shown. Member AO is temporarily removed for replacement. If the weight of the chairs and structural members results in a 100-lb load at each joint of the truss shown, determine the force in each member of the structure. With member AO replaced, could you repeat the analysis? (If no, please provide specific details to support your answer).

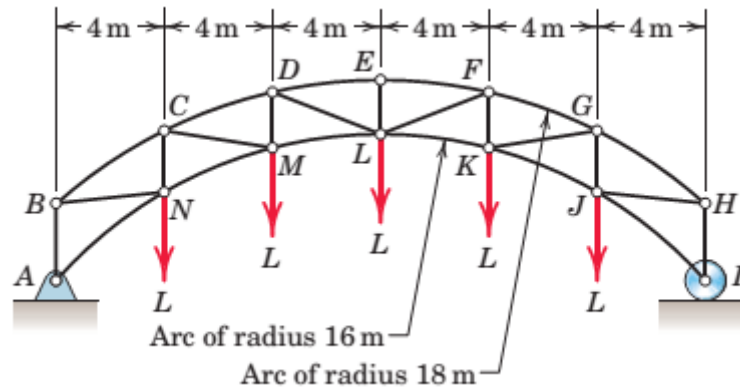100-lb vertical force on each joint
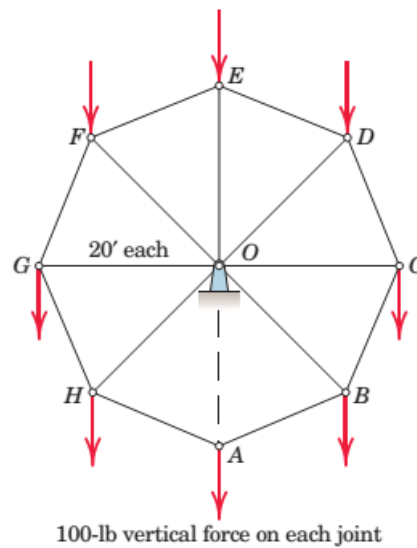
Problem 4. Calculate the forces in members AB, BH, and BG. Members BF and CG are cables which can support tension only.
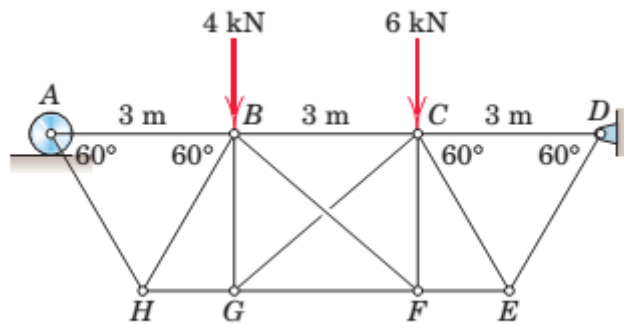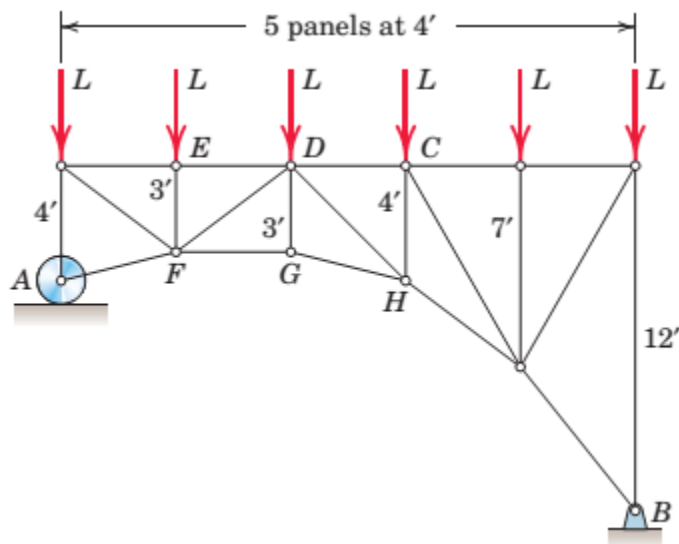
Problem 5. Determine the force in member CM of the loaded truss.
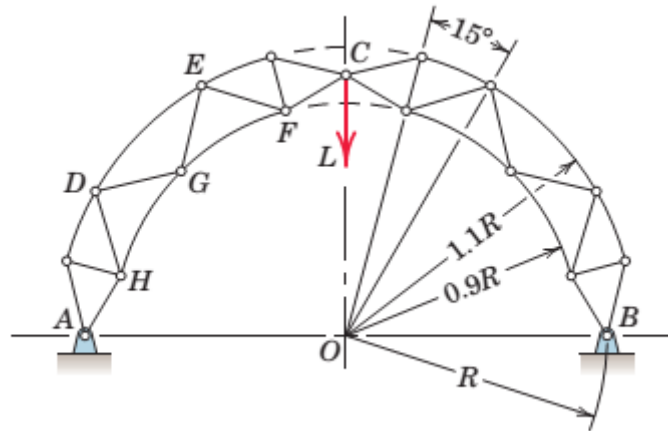

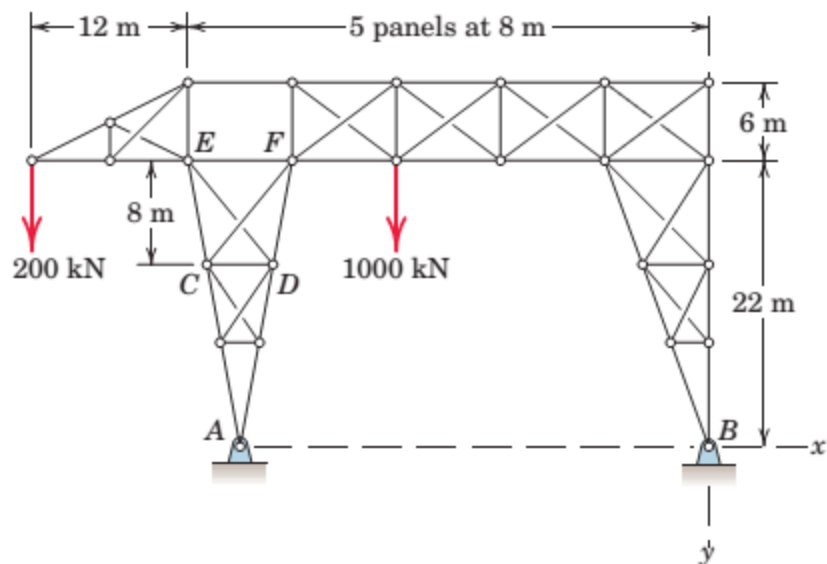**Problem 6.** Determine the force in member DG of the loaded truss.

Problem 7. Determine the force in member DG of the compound truss. The joints all lie on radial lines subtending angles of 15° as indicated, and the curved members act as two-force members. Distance OC = OA = OB = R.

Problem 8. In the traveling bridge crane shown all crossed members are slender tie rods incapable of supporting compression. Determine the forces in members DF and EF and find the horizontal reaction on the truss at A. Show that if CF = 0.0, DE =0.0 also.

Problem 9. The pyramidal truss section BCDEF is symmetric about the vertical x-z plane as shown. Cables AE, AF, and AB support a 5-kN load. Determine the force in member BE.