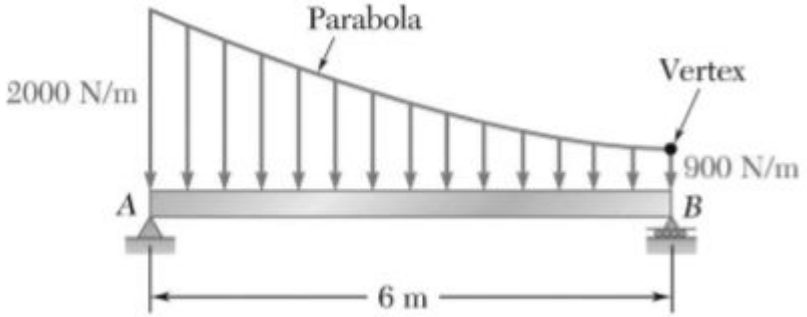
Distributed Load

Determine the reactions at A & B



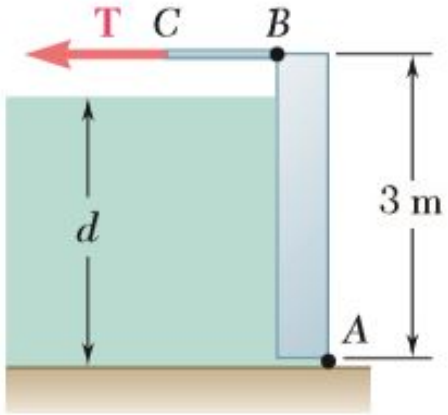


Fig. P5.82 and P5.83

5.82 The 3 × 4-m side AB of a tank is hinged at its bottom A and is held in place by a thin rod BC. The maximum tensile force the rod can withstand without breaking is 200 kN, and the design specifications require the force in the rod not to exceed 20 percent of this value. If the tank is slowly filled with water, determine the maximum allowable depth of water d in the tank.

Pure Bending

A steel bar of 20 mm x 60 mm rectangular cross section is subjected to two equal and opposite couples acting in the vertical plane of symmetry of the bar. Determine the value of the bending moment M that causes the bar to yield. Assume σ_m = 250 MPa

An aluminum rod with a semicircular cross section of radius r = 12 mm is bent into the shape of a circular arc of mean radius ρ =2.5 m. The flat face of the rod is turned toward the center of curvature of the arc, determine the maximum tensile and compressive stress in the rod. Use E = 70 GPa.