

Problems for curved beam stress analysis

1. The curved member shown in Figure 1 has a solid circular cross section 0.10 m in diameter. If the maximum tensile and compressive stresses in the member are not to exceed 150 MPa and 200 MPa respectively, determine the value of the load P which may be carried safely by the member.
($P = 47190 \text{ N}$).

2. Repeat problem Number 1 if the member has the trapezoidal section shown the Figure 2.
($P = 125180 \text{ N}$)

3. The curved member shown in Figure 3(a) has a triangular section shown in Figure 3(b). Compute the maximum tensile and compressive stresses at:

- (a) an infinitesimal distance above section a-a (13.9 ksi and -8.42 ksi).
(b) at section b-b (8.40 ksi and -14.8 ksi).

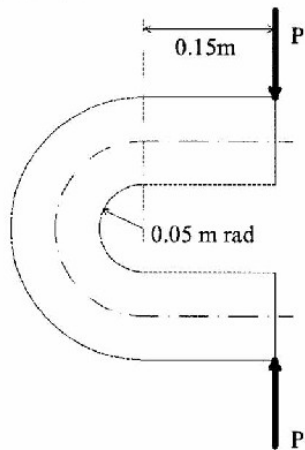


Figure 1

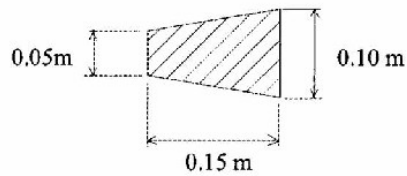


Figure 2

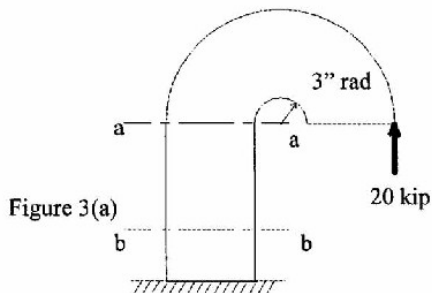


Figure 3(a)

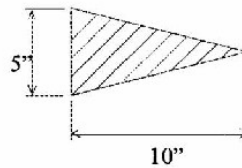


Figure 3(b)