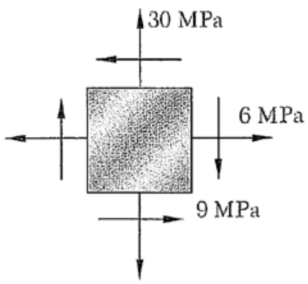

Fig. P7.8 and P7.12

7.34 Solve Prob. 7.12, using Mohr's circle.

7.9 through 7.12 For the given state of stress, determine (*a*) the orientation of the planes of maximum in-plane shearing stress, (*b*) the corresponding normal stress.

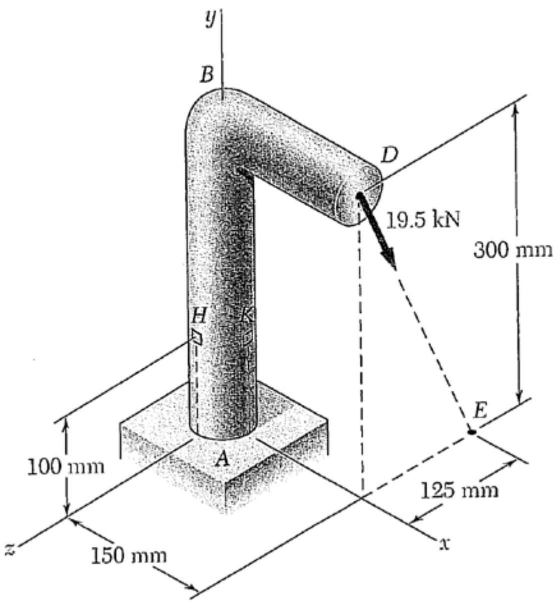

Fig. P7.23 and P7.24

7.46 Solve Prob. 7.24, using Mohr's circle.

7.24 A 19.5-kN force is applied at point *D* of the cast-iron post shown. Knowing that the post has a diameter of 60 mm, determine the principal stresses and the maximum shearing stress at point *K*.

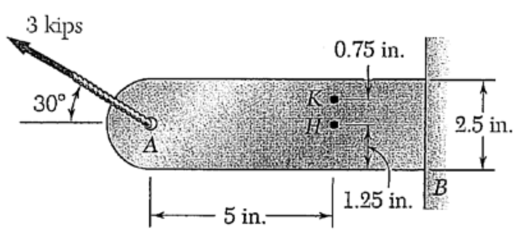

Fig. *P7.53*

7.54 Solve Prob. 7.53, considering point *K*.

7.53 Knowing that the bracket *AB* has a uniform thickness of $\frac{5}{8}$ in., determine (*a*) the principal planes and principal stresses at point *H*, (*b*) the maximum shearing stress at point *H*.

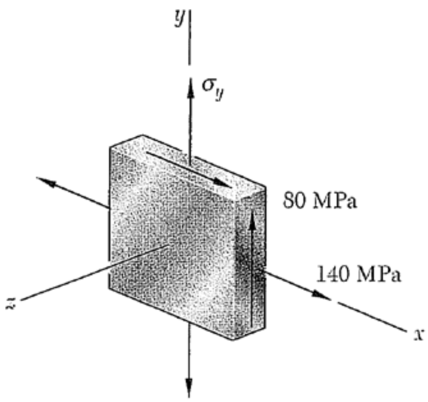

Fig. P7.68 and P7.69

7.69 For the state of stress shown, determine the maximum shearing stress when (*a*) σ_y = 20 MPa, (*b*) σ_y = 140 MPa. (*Hint:* Consider both in-plane and out-of-plane shearing stresses.)

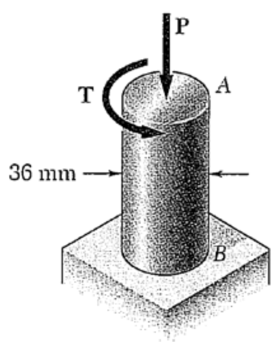

Fig. *P7.87*

7.87 The 36-mm-diameter shaft is made of a grade of steel with a 250-MPa tensile yield stress. Using the maximum-shearing-stress criterion, determine the magnitude of the torque **T** for which yield occurs when P = 200 kN.

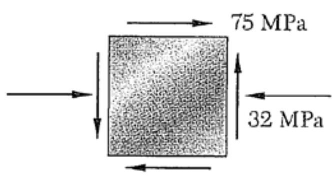

Fig. P7.91

7.91 and 7.92 The state of plane stress shown is expected in an aluminum casting. Knowing that for the aluminum alloy used σ_{UT} = 80 MPa and σ_{UC} = 200 MPa and using Mohr's criterion, determine whether rupture of the casting will occur.