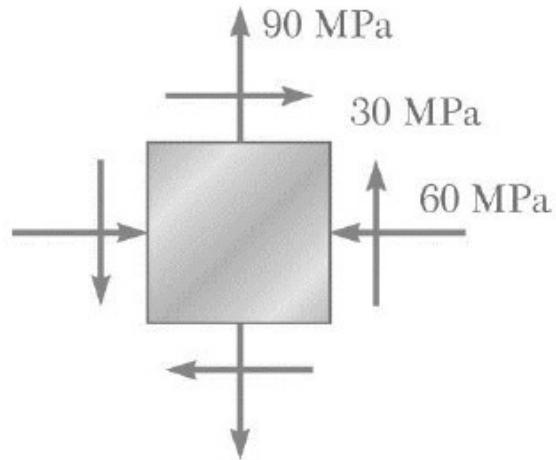


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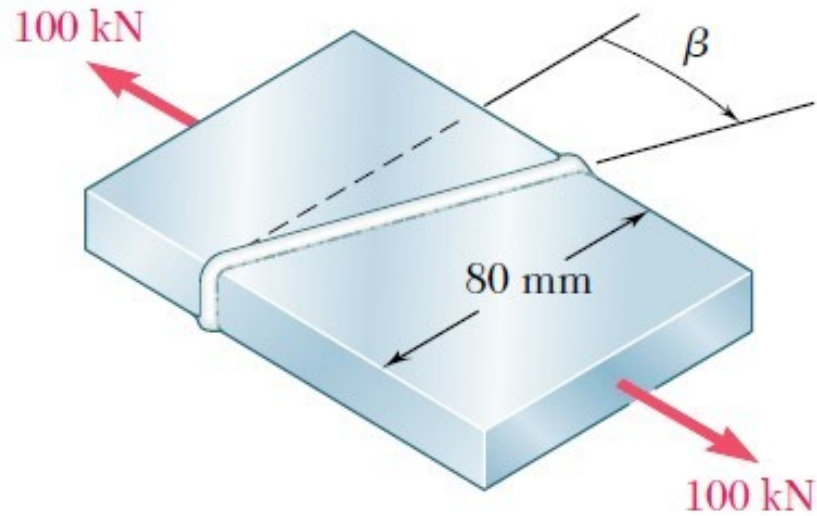


PROBLEM HOUR VIII

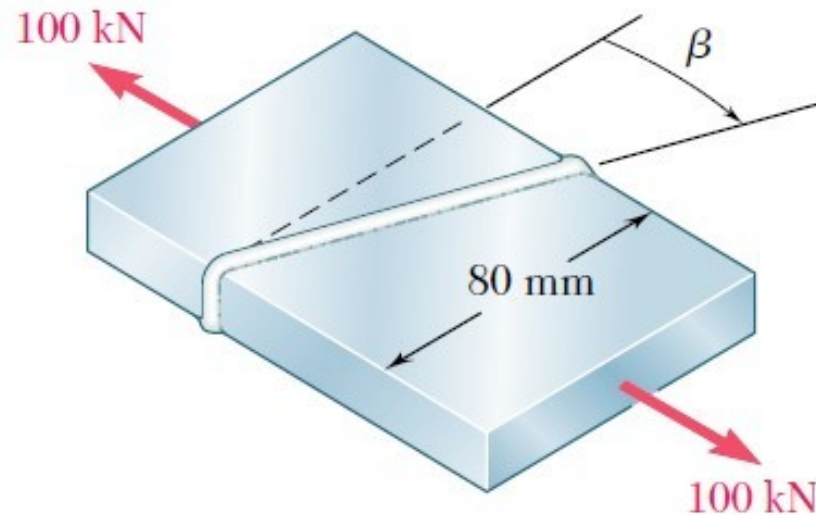
Q1) For the given state of stress, determine the normal and shearing stresses with using Mohr's circle after the element shown has been rotated through (a) 25° clockwise, (b) 10° counterclockwise.



Q2) Two steel plates of uniform cross section $10 \times 80\text{mm}$ are welded together as shown. Knowing that centric 100-kN forces are applied to the welded plates and that $\beta = 25^\circ$, determine (a) the in-plane shearing stress parallel to the weld, (b) the normal stress perpendicular to the weld with using Mohr's circle.



Q3) Two steel plates of uniform cross section 10×80 mm are welded together as shown. Knowing that centric 100-kN forces are applied to the welded plates and that the in-plane shearing stress parallel to the weld is 30 MPa, determine (a) the angle β , (b) the corresponding normal stress perpendicular to the weld with using Mohr's circle.



Q4) For the given state of stress, determine (a) the principal planes, (b) the principal stresses.

For the given state of stress, determine (a') the orientation of the planes of maximum in-plane shearing stress, (b') the maximum in-plane shearing stress and the corresponding normal stress.

