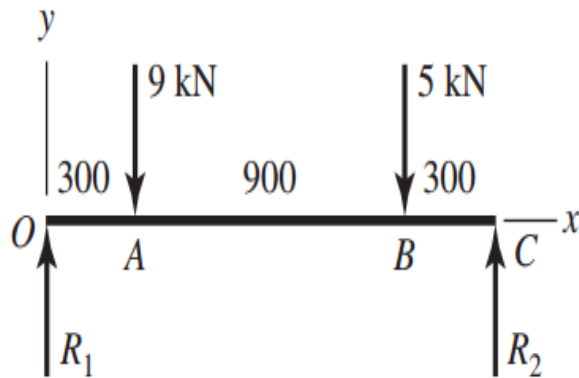


Exercise

Chapter 3

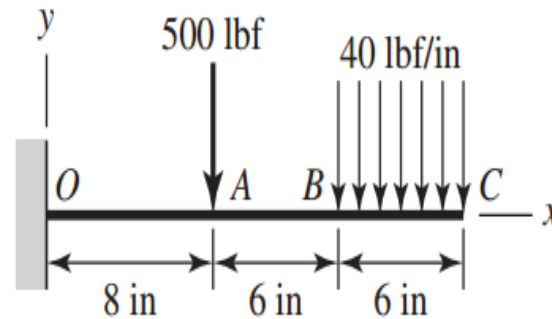
**3-5 to
3-8**

For the beam shown, find the reactions at the supports and plot the shear-force and bending-moment diagrams. Label the diagrams properly and provide values at all key points.



Problem 3-5

Dimensions in millimeters

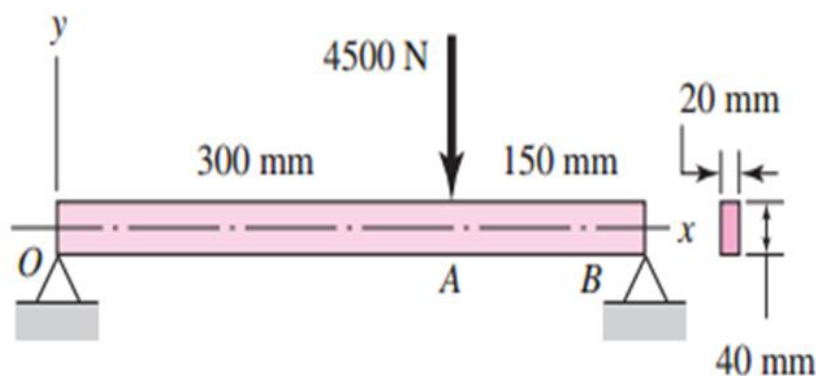


Problem 3-6

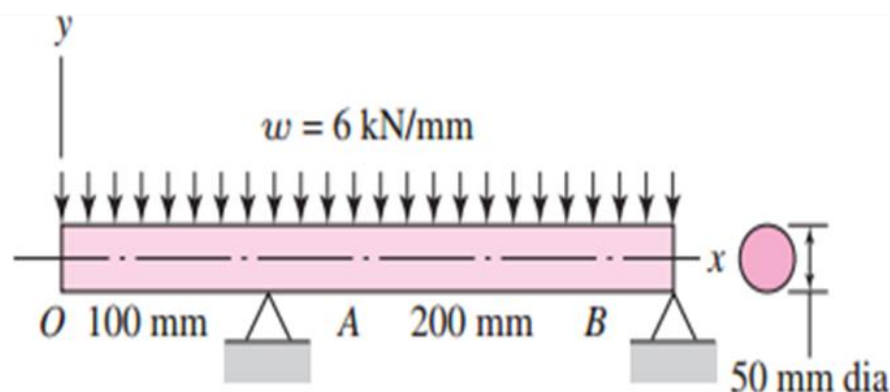
3-15 For each of the plane stress states listed below, draw a Mohr's circle diagram properly labeled, find the principal normal and shear stresses, and determine the angle from the x axis to σ_1 . Draw stress elements as in Fig. 3-11*c* and *d* and label all details.

- (a) $\sigma_x = -8 \text{ MPa}$, $\sigma_y = 7 \text{ MPa}$, $\tau_{xy} = 6 \text{ MPa}$ cw
 (b) $\sigma_x = 9 \text{ MPa}$, $\sigma_y = -6 \text{ MPa}$, $\tau_{xy} = 3 \text{ MPa}$ cw
 (c) $\sigma_x = -4 \text{ MPa}$, $\sigma_y = 12 \text{ MPa}$, $\tau_{xy} = 7 \text{ MPa}$ ccw
 (d) $\sigma_x = 6 \text{ MPa}$, $\sigma_y = -5 \text{ MPa}$, $\tau_{xy} = 8 \text{ MPa}$ ccw

3-35 to 3-38 For the beam illustrated in the figure, find the locations and magnitudes of the maximum tensile bending stress due to M and the maximum shear stress due to V .



Problem 3-35



Problem 3-38