PROBLEM 5.5
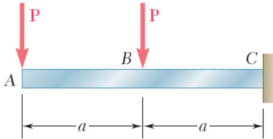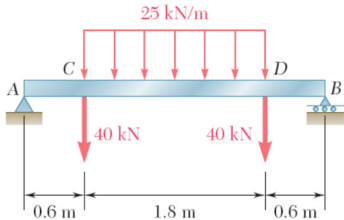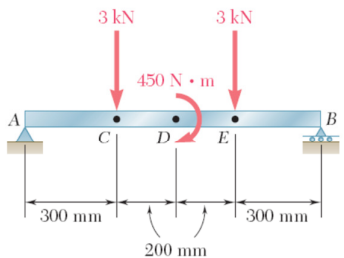
For the beam and loading shown, (*a*) draw the shear and bending-moment diagrams, (*b*) determine the equations of the shear and bending-moment curves.
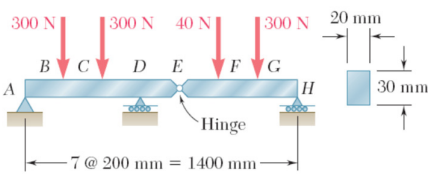
PROBLEM 5.9

Draw the shear and bending-moment diagrams for the beam and loading shown, and determine the maximum absolute value (*a*) of the shear, (*b*) of the bending moment.
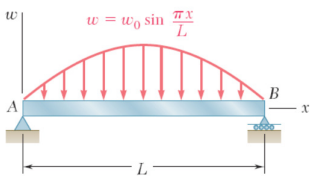
PROBLEM 5.11

Draw the shear and bending-moment diagrams for the beam and loading shown, and determine the maximum absolute value (*a*) of the shear, (*b*) of the bending moment.
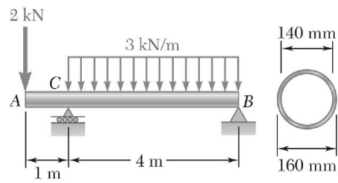
PROBLEM 5.23

Draw the shear and bending-moment diagrams for the beam and loading shown, and determine the maximum normal stress due to bending.
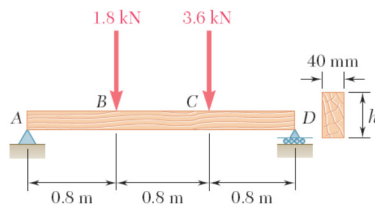
PROBLEM 5.52

Determine (*a*) the equations of the shear and bending-moment curves for the beam and loading shown, (*b*) the maximum absolute value of the bending moment in the beam.
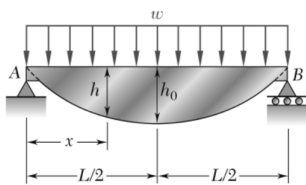
PROBLEM 5.54

Draw the shear and bending-moment diagrams for the beam and loading shown and determine the maximum normal stress due to bending.

PROBLEM 5.65

For the beam and loading shown, design the cross section of the beam, knowing that the grade of timber used has an allowable normal stress of 12 MPa.

PROBLEM 5.126

The beam AB, consisting of a cast-iron plate of uniform thickness b and length L, is to support the load shown. (a) Knowing that the beam is to be of constant strength, express h in terms of x, L, and h_0. (b) Determine the maximum allowable load if $L=0.9$ m, $h_0 = 300$ mm, $b = 30$ mm, and $\sigma_{all} = 165$ MPa.
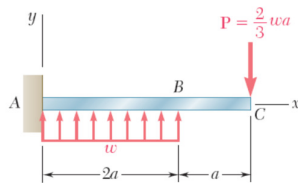
PROBLEM 9.5

For the cantilever beam and loading shown, determine (a) the equation of the elastic curve for portion AB of the beam, (b) the deflection at B, (c) the slope at B.
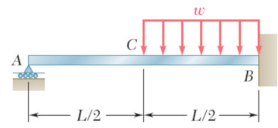
$P = \frac{2}{3}wa$
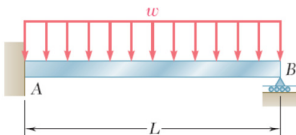
PROBLEM 9.19

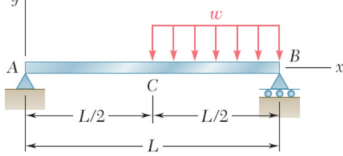For the beam and loading shown, determine the reaction at the roller support.
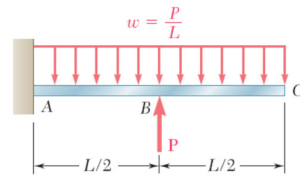
$[x = 0,\ y = 0]$ $[x = L,\ y = 0]$

$\left[x = 0,\ \dfrac{dy}{dx} = 0 \right]$

PROBLEM 9.28

Determine the reaction at the roller support and draw the bending moment diagram for the beam and loading shown.
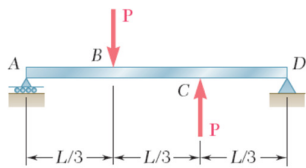
PROBLEM 9.35

For the beam and loading shown, determine (a) the equation of the elastic curve, (b) the slope at end A, (c) the deflection of point C.
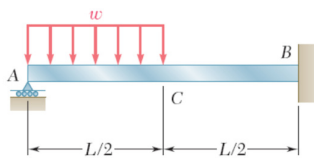
PROBLEM 9.66

$w = \dfrac{P}{L}$

For the cantilever beam and loading shown, determine the slope and deflection at the end.
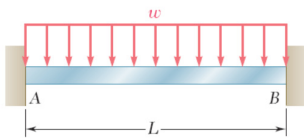
PROBLEM 9.68

$M_A = Pa$
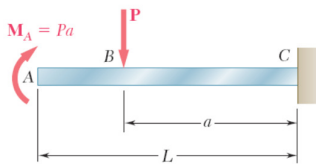
For the cantilever beam and loading shown, determine the slope and deflection at the free end.

PROBLEM 9.72

For the beam and loading shown, determine (a) the deflection at point C, (b) the slope at end A.

PROBLEM 9.80

For the uniform beam shown, determine (a) the reaction at A, (b) the reaction at B.

PROBLEM 9.84

For the beam shown, determine the reaction at B.