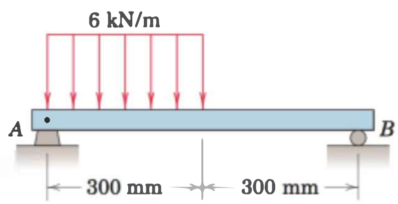
PROBLEMS

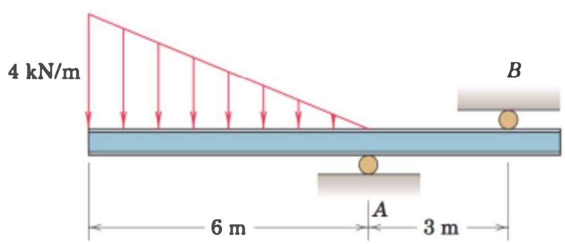
Introductory Problems

5/101 Determine the reactions at A and B for the beam subjected to the uniform load distribution.



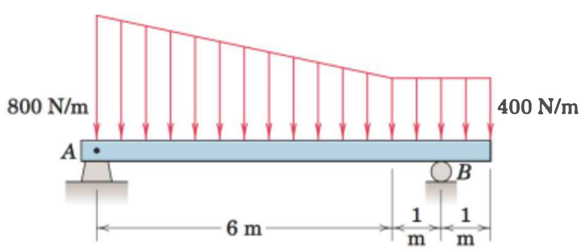
Problem 5/101

5/102 Calculate the reactions at A and B for the beam loaded as shown.



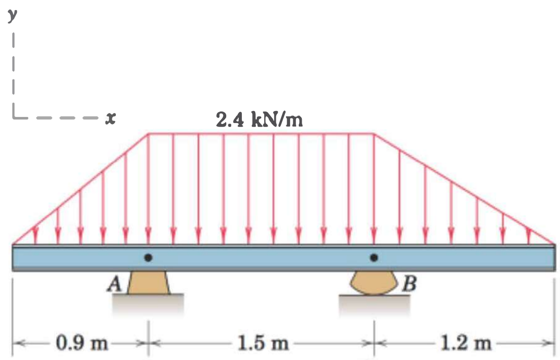
Problem 5/102

5/103 Determine the reactions at the supports of the beam which is loaded as shown.



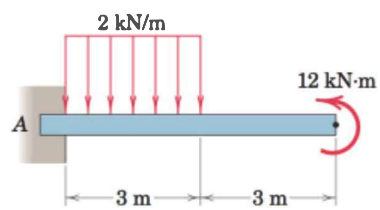
Problem 5/103

5/104 Determine the reactions at A and B for the loaded beam.



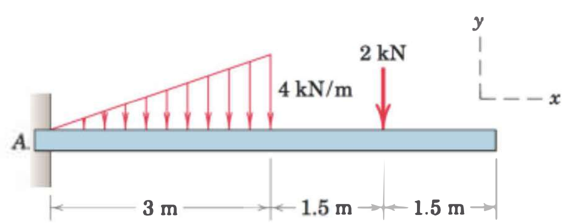
Problem 5/104

5/105 Find the reaction at A due to the uniform loading and the applied couple.



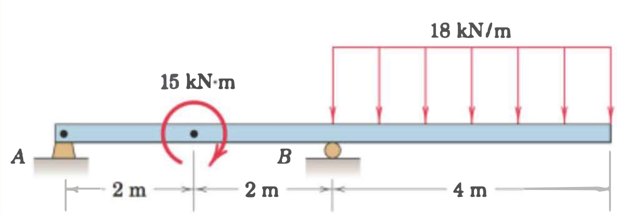
Problem 5/105

5/106 Determine the reactions at A for the cantilever beam subjected to the distributed and concentrated loads.



Problem 5/106

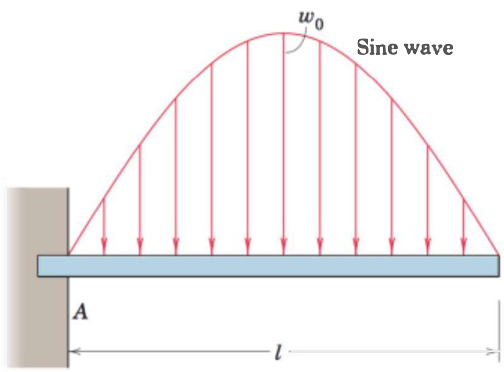
5/107 Determine the reactions at A and B for the beam loaded as shown.



Problem 5/107

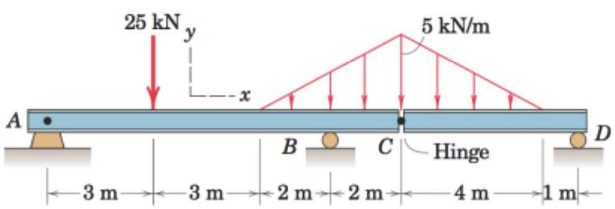
Representative Problems

5/108 Determine the force and moment reactions at the support A of the built-in beam which is subjected to the sine-wave load distribution.



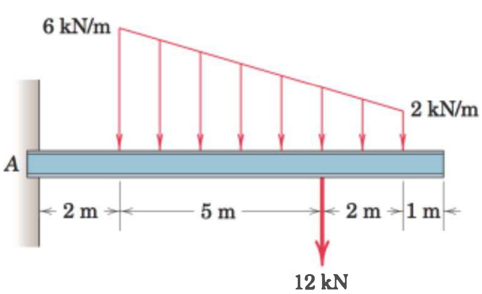
Problem 5/108

5/109 Determine the reactions at A, B, and D for the pair of beams connected by the ideal pin at C and subjected to the concentrated and distributed loads.



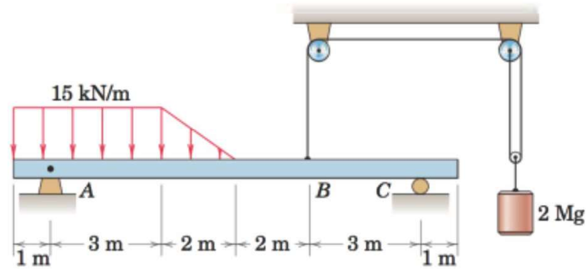
Problem 5/109

5/110 Determine the force and moment reactions at A for the cantilever beam subjected to the loading shown.



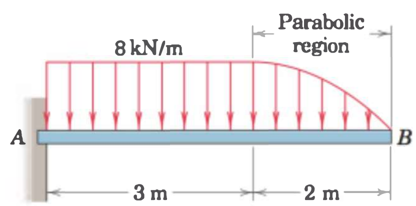
Problem 5/110

5/111 Determine the reactions at A and C for the beam subjected to the combination of point and distributed loads.



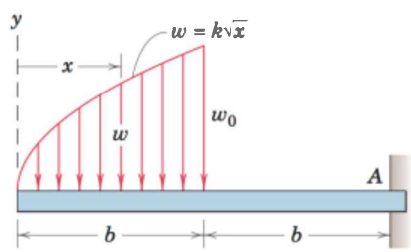
Problem 5/111

5/112 Determine the reactions at the support for the beam which is subjected to the combination of uniform and parabolic loading distributions.



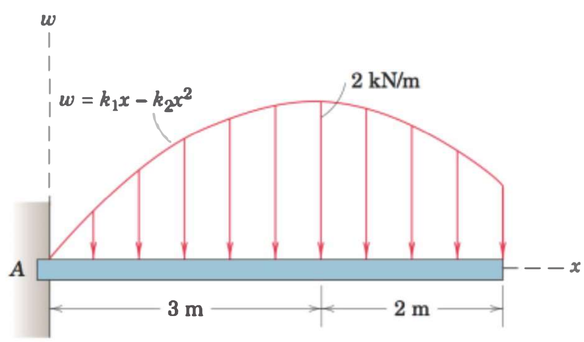
Problem 5/112

5/113 Determine the force and moment reactions at the support A of the cantilever beam subjected to the load distribution shown.



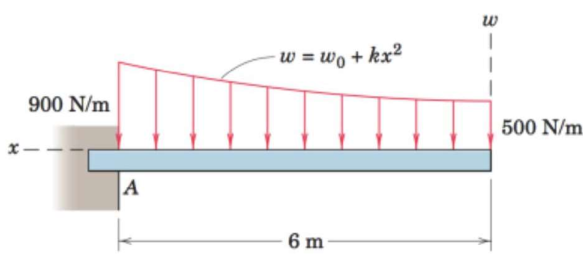
Problem 5/113

5/114 Compute the reactions at A for the cantilever beam subjected to the distributed load shown. The distributed load reaches a maximum value of 2 kN/m at x = 3 m.



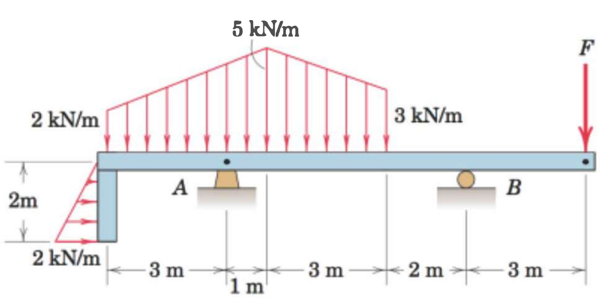
Problem 5/114

5/115 A cantilever beam supports the variable load shown. Calculate the supporting force R_A and moment M_A at A.



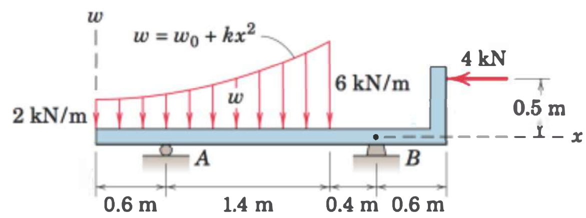
Problem 5/115

5/116 For the beam and loading shown, determine the magnitude of the force F for which the vertical reactions at A and B are equal. With this value of F, compute the magnitude of the pin reaction at A.



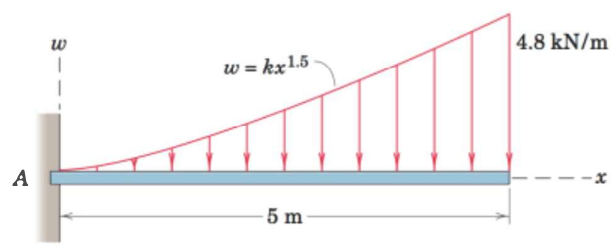
Problem 5/116

5/117 Determine the reactions at A and B for the beam subjected to the distributed and concentrated loads.



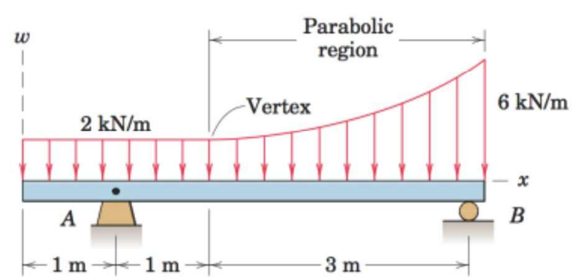
Problem 5/117

5/118 Determine the force and moment reactions at A for the beam which is subjected to the distributed load shown.



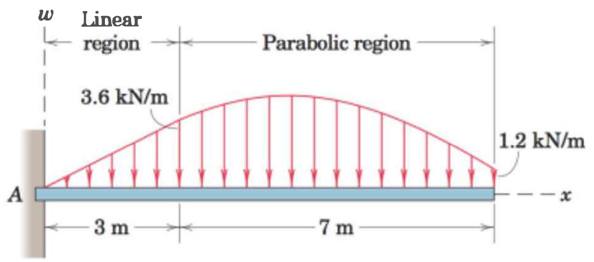
Problem 5/118

5/119 Determine the reactions at the supports of the beam which is acted on by the combination of uniform and parabolic loading distributions.



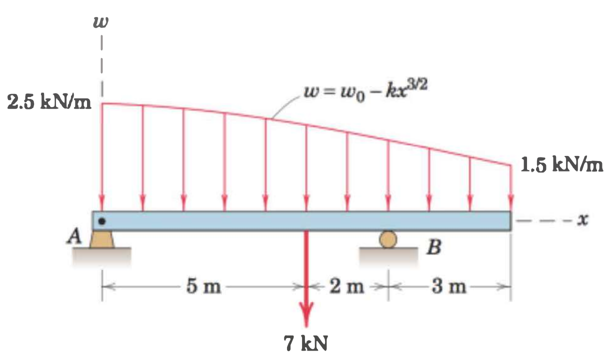
Problem 5/119

5/120 Determine the reactions at end A of the cantilever beam which is subjected to both linear and parabolic loads that act over the indicated regions. The slope of the distributed loading is continuous over the length of the beam.



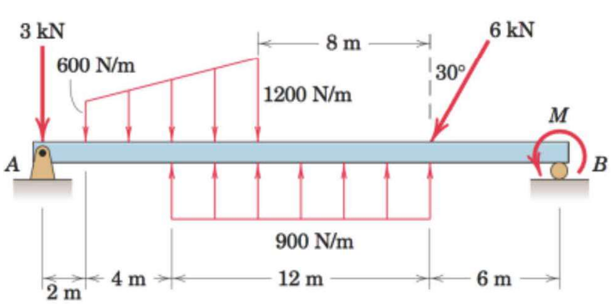
Problem 5/120

5/121 Determine the reactions at A and B on the beam subjected to the point and distributed loads.



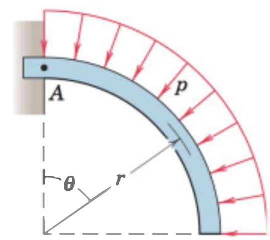
Problem 5/121

5/122 Determine the magnitude of the moment M which will cause the beam to just begin to lift off the roller at B. For this value of M, determine the magnitude of the pin reaction at A.



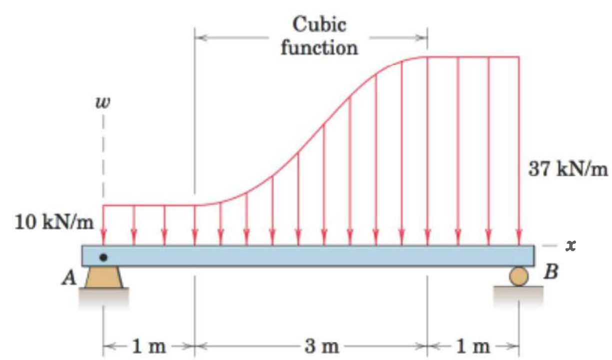
Problem 5/122

▶**5/123** The quarter-circular cantilever beam is subjected to a uniform pressure on its upper surface as shown. The pressure is expressed in terms of the force p per unit length of circumferential arc. Determine the reactions on the beam at its support A in terms of the compression C_A, shear V_A, and bending moment M_A.



Problem 5/123

▶**5/124** The transition between the loads of 10 kN/m and 37 kN/m is accomplished by means of a cubic function of form $w = k_0 + k_1x + k_2x^2 + k_3x^3$, the slope of which is zero at its endpoints $x = 1$ m and $x = 4$ m. Determine the reactions at A and B.



Problem 5/124