

PROBLEM 10.1

For the beam and loading shown, determine the reactions at (a) A, (b) B, and (c) C.



SOLUTION

Free-body diagram:

PART (a) REACTION AT A

By the method of sections, cut through the beam at A:

Sum of moments about A = 0 (clockwise positive):

$$+ \circlearrowleft \sum M_A = 0: \quad 6(2) - A_y(6) = 0 \quad A_y = 2 \text{ kN}$$

Sum of horizontal forces = 0:

$$+ \rightarrow \sum F_x = 0: \quad A_x = 0$$

Reaction at A: $A_x = 0$, $A_y = 2 \text{ kN}$

PART (b) REACTION AT B

Sum of moments about C = 0 (clockwise positive):

$$+ \circlearrowleft \sum M_C = 0: \quad 6(2)(6) - B(6) = 0 \quad B = 12 \text{ kN}$$