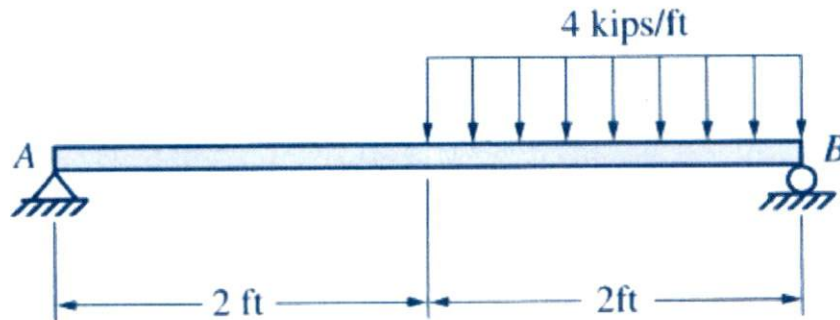


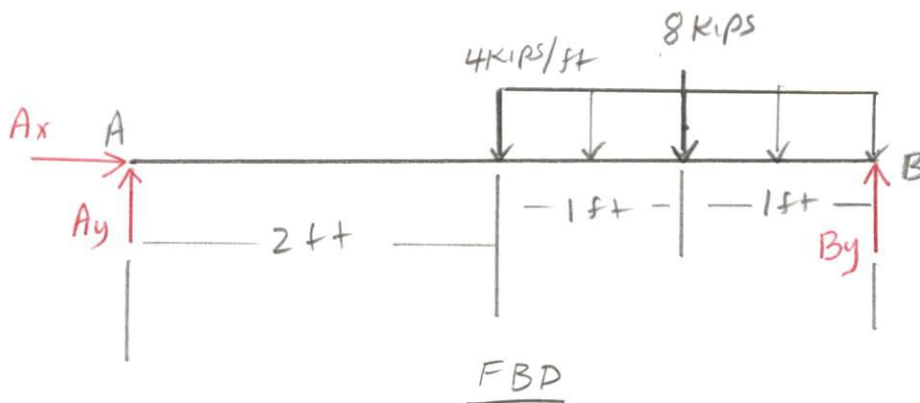
13-22a

13-22 to 13-37 Refer to Figs. P13-22 to P13-37. Construct the shear force and the bending moment diagrams for the beam in each figure due to the loading shown by using the relationships among the load, shear, and moment diagrams.



Solution.

step 1. Solve for the reactions at the supports A and B



Equilibrium Equations

ccw + M ↺
cw - M ↻

$$[\sum F_x = 0] \quad A_x = 0$$

$$[\sum M_A = 0] \quad - 8 \text{ kips} (3 \text{ ft}) + B_y (4 \text{ ft}) = 0$$

$$B_y = \frac{24 \text{ kip} \cdot \text{ft}}{4 \text{ ft}} = 6 \text{ kips} \uparrow$$

$$[\sum F_y = 0] \quad A_y - 8 \text{ kips} + B_y = 0$$

$$A_y = 8 \text{ kips} - 6 \text{ kips} = 2 \text{ kips} \uparrow$$

Step 2 Shear and Moment Diagrams

13-22a

