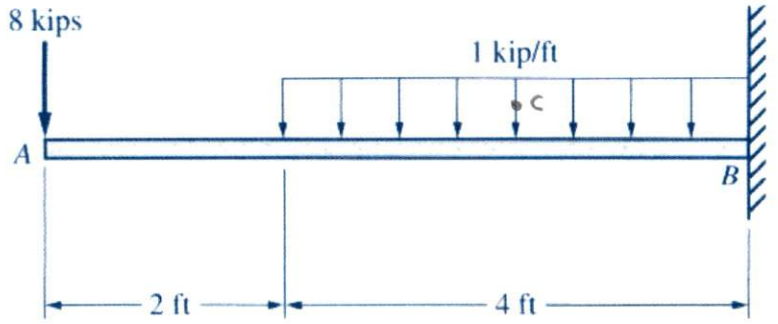
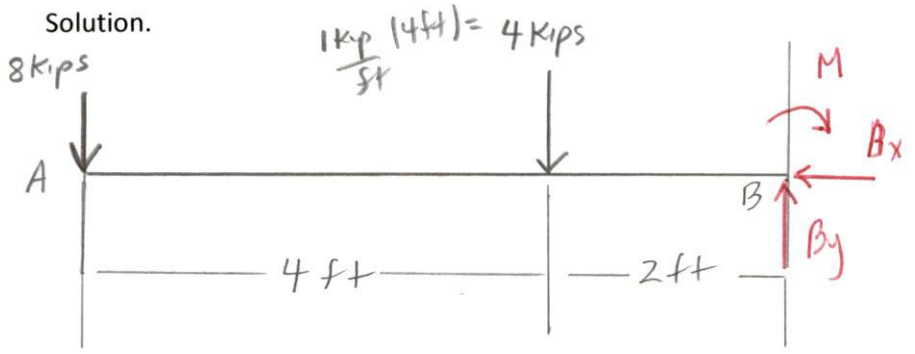
13-4

Determine the external reactions on each beam in Figs. P13-1 to P13-6 due to the loading shown.



Solution.



FBD

CCW +M ↺

CW −M ↻

Equilibrium Equations

$[\Sigma F_x = 0]$ $B_x = 0$

$[\Sigma F_y = 0]$ $-8\text{ kips} - 4\text{ kips} + B_y = 0$

$B_y = 12\text{ kips} \uparrow$

$[\Sigma M_B = 0]$ $+8\text{ kips}(6\text{ ft}) + 4\text{ kips}(2\text{ ft}) - M = 0$

$M = 48\text{ kips·ft} + 8\text{ kips·ft}$

$= 56\text{ kips·ft}$ ↻

$M = -56\text{ k·ft}$ ↻