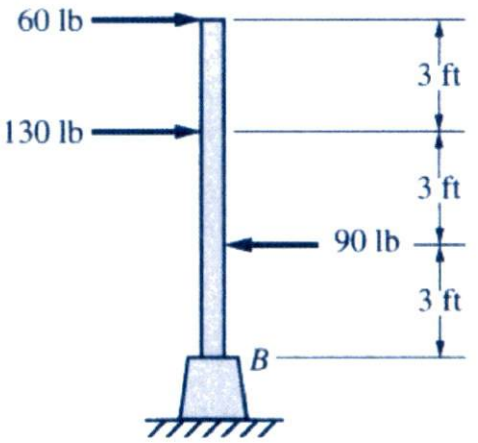
2-61

Refer to Fig. P2-61. Determine the height of the point above the base B through which the resultant of the three forces passes.

Solution.



Magnitude

$$R_x = \Sigma F_x = 60\text{ lb} + 130\text{ lb} - 90\text{ lb} = 100\text{ lb} \rightarrow$$

$$R_y = \Sigma F_y = 0$$

ccw +M ↺
cw −M ↻

Direction

$$\theta = 0^\circ$$

or $\rightarrow$

Location

$$R_x \bar{y} = \Sigma M_B$$

$$-(100\text{ lb})\bar{y} = -60\text{ lb}(9\text{ ft}) - 130\text{ lb}(6\text{ ft}) + 90\text{ lb}(3\text{ ft})$$

$$\bar{y} = \frac{1050\text{ lb.ft}}{100\text{ lb}}$$

$$= 10.5\text{ ft} \quad \text{above B}$$

$R = 100$ lb $\rightarrow$ located 10.5 ft above B