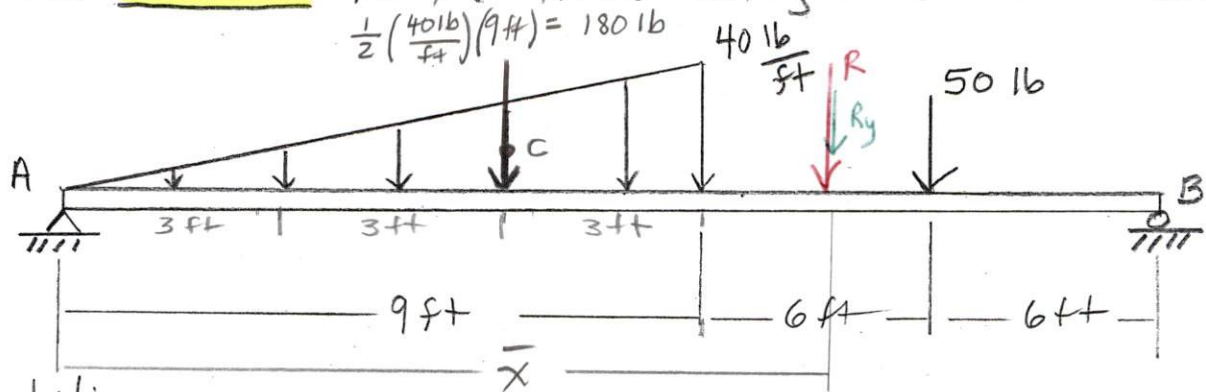


Show all work for Full credit. ALL angles are to be measured ccw from the +x-axis. All vector answers are to be positive scalar, true direction

Name Solution

1. Determine the Magnitude, direction, and location of the Resultant for the forces acting on the beam shown.



Solution.

Magnitude

$$R_x = \sum F_x = 0$$

$$R_y = \sum F_y = -180 \text{ lb} - 50 \text{ lb} = -230 \text{ lb} = 230 \text{ lb} \downarrow$$

$$R = 230 \text{ lb}$$

ccw +M ↺
cw -M ↻

Direction

$$\theta = 270^\circ \text{ or } \downarrow$$

Location

$$R_y \bar{x} = \sum M_A$$

$$\bar{x} = \frac{180 \text{ lb} (6 \text{ ft}) + 50 \text{ lb} (15 \text{ ft})}{230 \text{ lb}}$$

$$= \frac{1830 \text{ lb} \cdot \text{ft}}{230 \text{ lb}} = 8 \text{ ft to the right of pt. A}$$

$R = 230 \text{ lb} \downarrow$ located 8 ft to the right of point A