

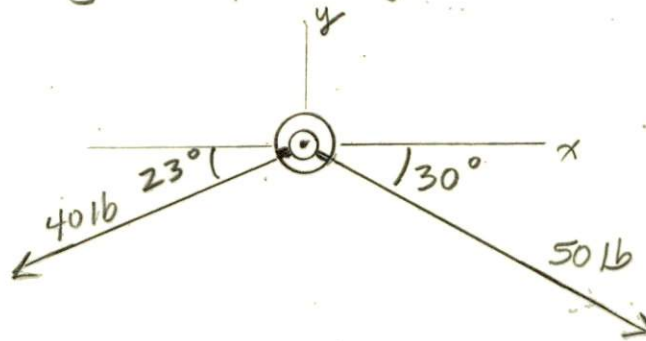
Show all work for full credit

All angles are to be measured ccw from the +x-axis

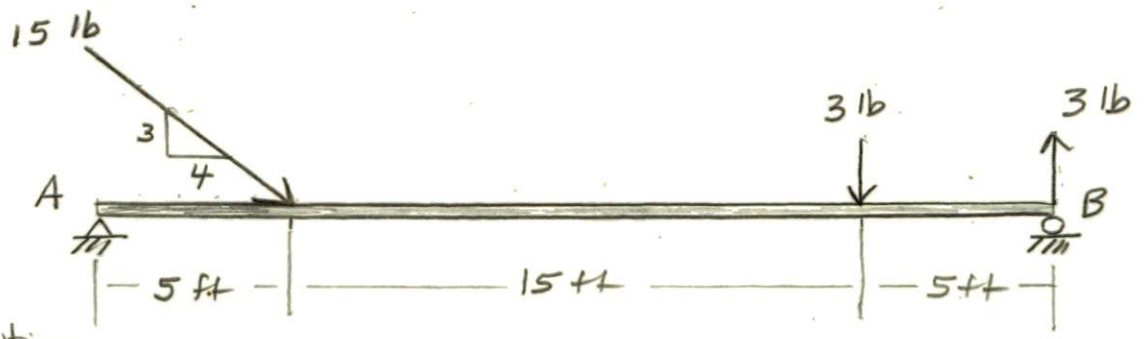
All vector answers are to be positive scalar, true direction

Name _____

1. Determine the resultant of the two forces acting on the ring using the parallelogram Law or Triangle Rule.



2. Determine the magnitude, direction, and location for the forces acting on the beam. Locate the resultant wrt point A.



Solution.

Magnitude

$$R_x = \sum F_x = \underline{\hspace{10em}}$$

$$R_y = \sum F_y = \underline{\hspace{10em}}$$

$$R = \sqrt{R_x^2 + R_y^2} = \underline{\hspace{10em}}$$

} Resultant lies in Quad _____

Direction

$$\alpha = \tan^{-1} \left| \frac{R_y}{R_x} \right| = \underline{\hspace{10em}}$$

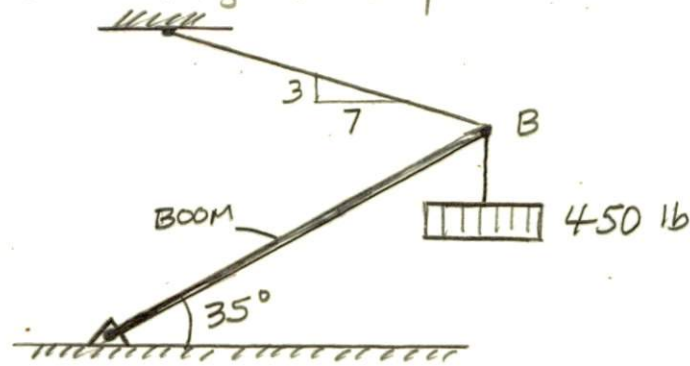
$$\theta = \underline{\hspace{10em}}$$

Location

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

Ans. _____

3. Determine the tension in the cable (T_{AB}) and the force in the boom (F_{BC}) using (a) the force-triangle method and (b) rectangular components and equilibrium equations.

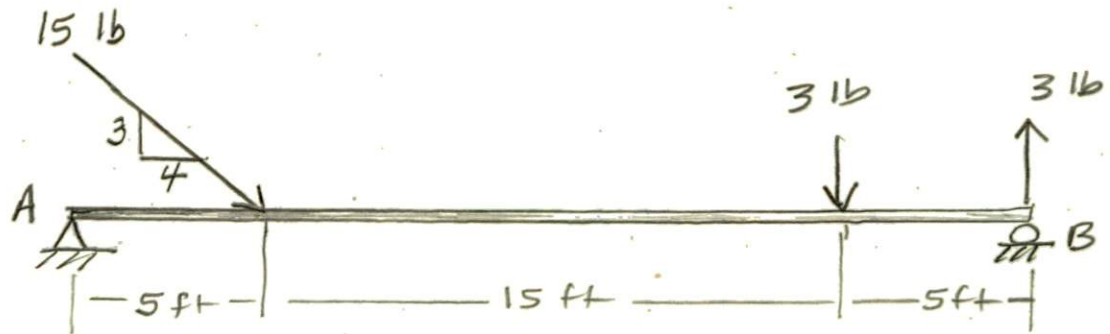


Solution.

(a) Force-Triangle Method

(b) Equilibrium Equations

4. Determine the reactions at the supports for the forces acting on the beam.



Solution