

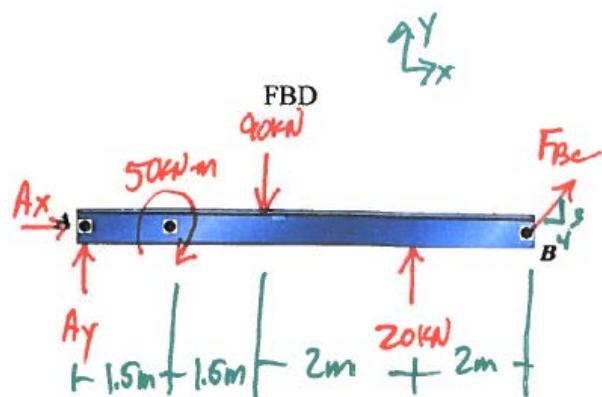
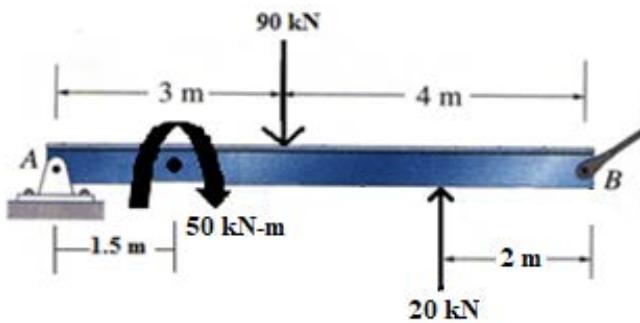
# EGM 3420C - Engineering Mechanics

## Statics Review 1 Problems

### Problem 1

- a. Draw a complete Free Body Diagram of the body AB below.

Note: Member BC is pinned at both ends.



- b. Determine the reactions at supports A and C.

$$\rightarrow \sum M_A = 0$$

$$50 \text{ kN}\cdot\text{m} + 3\text{m}(90 \text{ kN}) - 5\text{m}(20 \text{ kN}) - \frac{3}{5}F_{Bc}(7\text{m}) = 0$$

$$50 + 270 - 100 - 4.2F_{Bc} = 0$$

$$F_{Bc} = 52.4 \text{ kN} \quad \text{Ans}$$

$$\rightarrow \sum F_x = 0$$

$$Ax + \frac{4}{5}F_{Bc} = 0$$

$$Ax + \frac{4}{5}(52.4) = 0 \quad Ax = -41.9 = 41.9 \text{ kN} \leftarrow$$

$$\uparrow \sum F_y = 0$$

$$Ay - 90 + 20 + \frac{3}{5}(52.4) = 0$$

$$Ay = 38.6 \text{ kN} \uparrow$$

**ANSWER:**

$$F_{Bc} = 52.4 \text{ kN} \quad \text{Ans}, \quad Ax = 41.9 \text{ kN} \leftarrow, \quad Ay = 38.6 \text{ kN} \uparrow$$