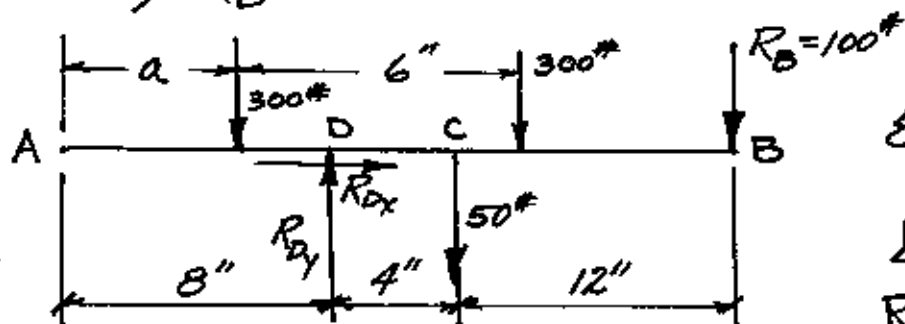


DETERMINE RANGE of "a"

4.12 p.168

MILANO

- a.)  $R_B \leq 100 \text{ lb}$  ↓  
 and b.)  $R_B \leq 200 \text{ lb}$  ↑



$$\sum F_x = 0 = R_{Dx}$$

$$\sum F_y = 0$$

$$R_{Dy} = 750 \text{ lb}$$

If you only need to find distance "a", then select pt. D as your pivot for moments.

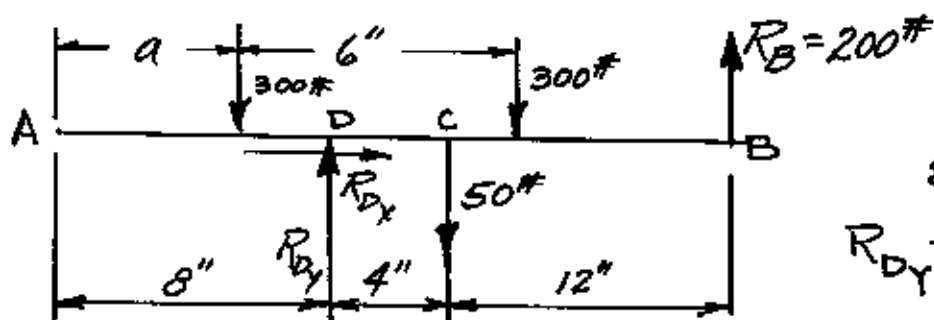
$$\sum M_D = 0 = 300 \text{ lb} [8 \text{ inches} - a] - 300 \text{ lb} [(6 \text{ inches} + a) - 8 \text{ inches}] - R_B (16 \text{ inches}) - 50 \text{ lb} (4 \text{ inches})$$

EXPAND AND SOLVE FOR UNKNOWN, "a"

$$2400 - 300a - 1800 - 300a + 2400 - 1600 - 200 = 0$$

$$1200 = 600a \quad \therefore \underline{a = 2 \text{ inches}}$$

REPEAT FOR OTHER CONDITION.



$$\sum F_x = 0 = R_{Dx}$$

$$\sum F_y = 0$$

$$R_{Dy} = 650 \text{ lb} - 200 \text{ lb} = 450 \text{ lb}$$

$$\sum M_D = 0 = 300 \text{ lb} [8 \text{ inches} - a] - 300 \text{ lb} [(6 \text{ inches} + a) - 8 \text{ inches}] + R_B (16 \text{ inches}) - 50 \text{ lb} (4 \text{ inches})$$

EXPAND AND SOLVE FOR "a"

$$2400 - 300a - 1800 - 300a + 2400 + 3200 - 200 = 0$$

$$6000 = 600a \quad \therefore \underline{a = 10 \text{ inches}}$$

$$\boxed{2 \text{ inches} \leq a \leq 10 \text{ inches}}$$