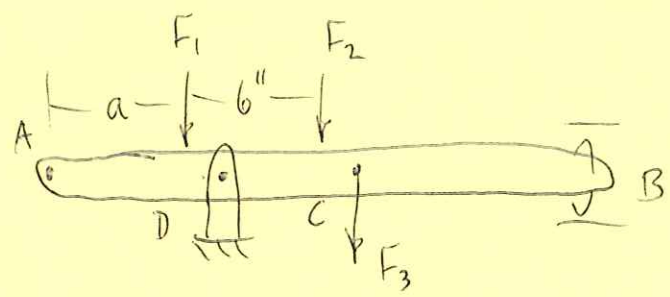
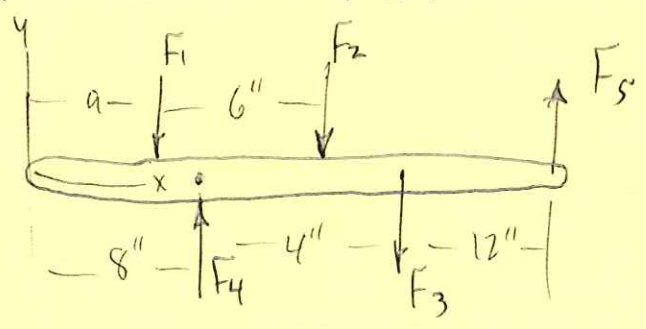


PRE IN-CLASS # 5 PROB. 4.12

FIND RANGE OF a



FREE-BODY DIAGRAM:



END FORCES:

$\sum F_y = 0$

$F_1 = (-300) \uparrow$ LB

$-300 - 300 - 50 + F_4 + F_5 = 0$

$F_2 = (-31)$

$F_4 + F_5 = 650$ EQN. (1)

$\sum M_A = 0 \quad +\uparrow$

$-300a - 300(a+6) - 50(12) + 8F_4 + 24F_5 = 0$

$-600a - 1800 - 600 + 8F_4 + 24F_5 = 0$

~~$8F_4 + 24F_5$~~

$$a = 0.0133 F_4 + 0.04 F_5 - 4 \quad \text{EQN. (2)}$$

$$\text{FOR } F_5 = -100 \text{ LB,}$$

$$F_4 = 750$$

$$a = 0.0133(750) + 0.04(-100) - 4 = 1.97 \text{ IN}$$

$$\text{FOR } F_5 = +200 \text{ LB,}$$

$$F_4 = 450 \text{ LB}$$

$$a = 0.0133(450) + 0.04(200) - 4 = 9.98 \text{ IN}$$

$$\boxed{1.97 \leq a \leq 9.98 \text{ IN}}$$