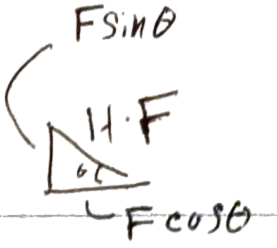
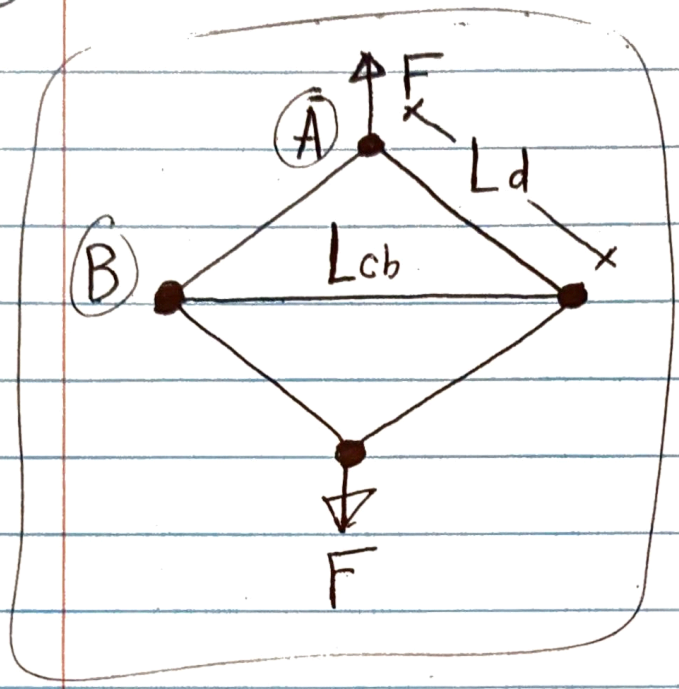
5-Scissor Jack

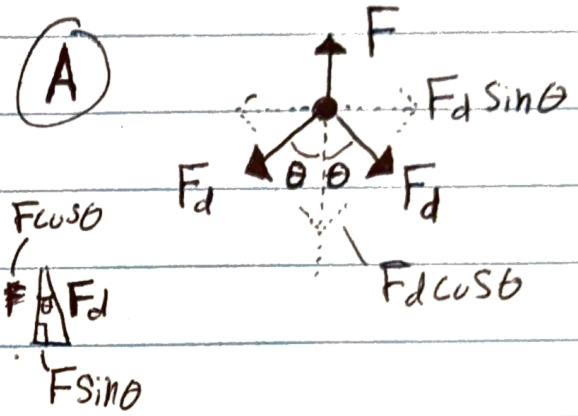


Sin Cos Tan

(a) FBD of all members

(b) Plot of F in cross bar & diagonal F(x) & F(F_AB)



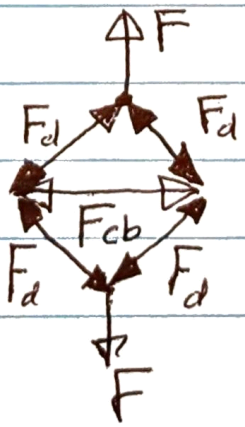


~~$\sum F_d \sin$~~ $2 \cdot F_d \cdot \cos\theta = F$

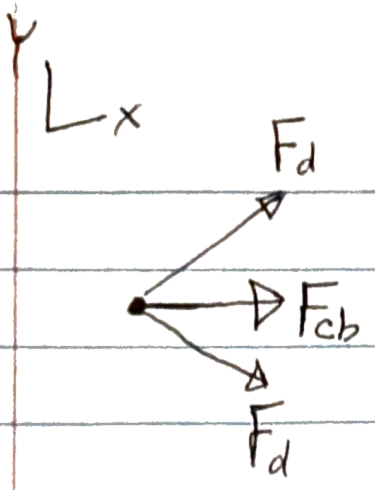
$$F_d = \frac{F}{2\cos\theta}$$

$$\sin\theta = \frac{L_{cb}/2}{L_d}$$

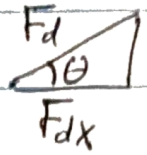
$$\theta = \arcsin\left(\frac{L_{cb}/2}{L_d}\right)$$



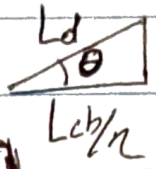
SHEET



$2 \cdot F_{d,x} = F_{cb}$



$$F_{dx} = F_d \cos\theta$$



$$\cos\theta = \frac{(L_{cb}/2)}{L_d}$$

$$\theta = \arccos\left(\frac{L_{cb}/2}{L_d}\right)$$

$$F_{cb} = 2 \cdot F_d \cdot \cos\theta$$

Plots

$L_d = 9.3 - 2(0.4)$ in

$L_{cb} = 13.02$

$L_d = 8.5$

~~Varies~~

Change

Stay Same

~~Change~~

Stay

~~Stay Same~~