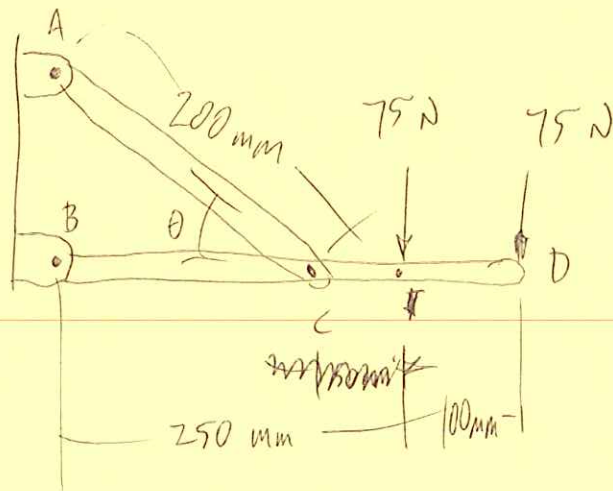


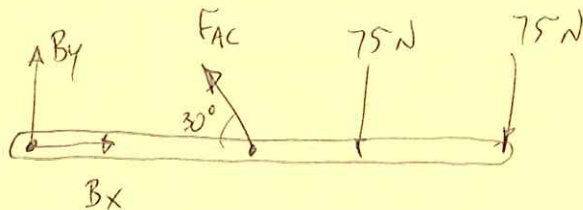
IN-CLASS #8 : PROB. 6.75



FIND FORCE IN AC AND REACTION AT B WHEN:

a) $\theta = 30^\circ$

FBD OF BD :



$$\vec{F}_{AC} = (-F_{AC} \cos 30^\circ) \hat{i} + (F_{AC} \sin 30^\circ) \hat{j} \text{ N}$$

$$\vec{F}_{AC} = (-0.866 F_{AC}) \hat{i} + (0.5 F_{AC}) \hat{j} \text{ N}$$

$$\sum M_B = 0 \quad +\curvearrowright$$

$$(200 \cos 30^\circ \text{ mm})(0.5 F_{AC}) - (250)(75) - (350)(75) = 0$$

$$F_{AC} = 520 \text{ N (TENSION)}$$

PROB. 6.75

$$\Sigma F_x = 0 : B_x = 0.866 F_{AC} = 450 \text{ N}$$

$$\Sigma F_y = 0 : B_y + 0.5 F_{AC} - 150 = 0$$

$$B_y = -110 \text{ N}$$

b) $\theta = 60^\circ$

$$\vec{F}_{AC} = (-F_{AC} \cos 60^\circ) \hat{i} + (F_{AC} \sin 60^\circ) \hat{j} \text{ N}$$

$$\vec{F}_{AC} = (-0.5 F_{AC}) \hat{i} + (0.866 F_{AC}) \hat{j} \text{ N}$$

$$\Sigma M_B = 0 \quad +\uparrow$$

$$(200 \cos 60^\circ \text{ mm})(0.866 F_{AC}) - (250)(75) - (350)(75) = 0$$

$$F_{AC} = 520 \text{ N TENSION}$$

$$\Sigma F_x = 0 : B_x = 0.5 F_{AC} = 260 \text{ N}$$

$$\Sigma F_y = 0 : B_y = 150 - 0.866 F_{AC} = -300 \text{ N}$$