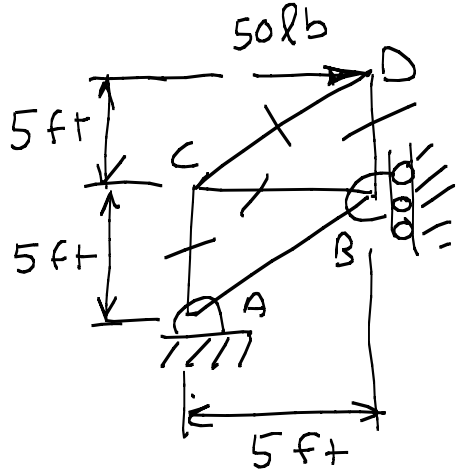
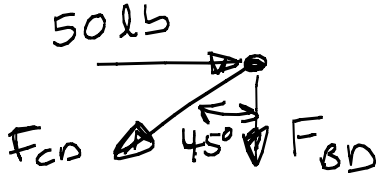
Problem 3

Determine the force in each member, and indicate whether the member is in tension or compression



Joint D



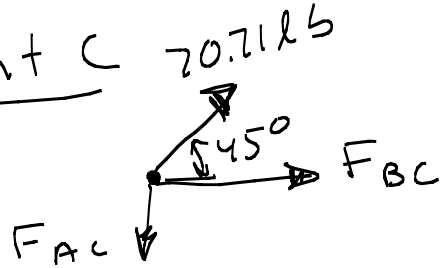
$\pm \Sigma F_x = 0 \Rightarrow 50\,lb - F_{CD}\sin 45^\circ = 0$

$F_{CD} = 70.71\,lb \quad (T)$

$+\uparrow \Sigma F_y = 0 \Rightarrow -F_{CD}\cos 45^\circ - F_{BD} = 0$

$F_{BD} = -50\,lb \quad (C)$

Joint C



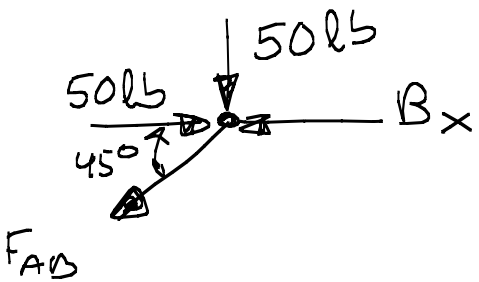
$\pm \Sigma F_x = 0 \Rightarrow 70.71\,lb\cos 45^\circ + F_{BC} = 0$

$F_{BC} = -50\,lb \quad (C)$

$+\uparrow \Sigma F_y = 0 \Rightarrow -F_{AC} + 70.71\,lb\sin 45^\circ = 0$

$$F_{AC} = 50\,lb\ (T)$$

Joint B



$$+\uparrow \Sigma F_y = 0 \Rightarrow -50\,lb - F_{AB}\sin 45^\circ = 0$$

$$F_{AB} = -70.71\,lb\ (C)$$