

KN	X_D	Y_D	N_A	T_1	T_2	T_3	T_4	T_5	T_6	T_7
	1.5	0.55	2.05	0	-2.05	2.9	-2.05	-2.05	-2.05	-0.778
					Comp.	Tension	Comp.	Comp.	Comp.	Comp.

$$\begin{aligned} \rightarrow \sum F_x = 0 & \quad X_D - 3 \sin 30 = 0 & \quad \therefore X_D = 1.5 \text{ KN} \\ \uparrow \sum F_y = 0 & \quad N_A - 30 \cos 30 + Y_D = 0 & \quad \therefore Y_D + N_A = 1.5\sqrt{3} \\ \curvearrowright \sum M_D = 0 & \quad 3 \sin 30 * 2 + 30 \cos 30 * 2 - N_A * 4 = 0 & \quad \text{--- (1)} \end{aligned}$$

$$\therefore N_A = 2.05 \text{ KN}$$

$$\therefore Y_D = 0.55 \text{ KN}$$

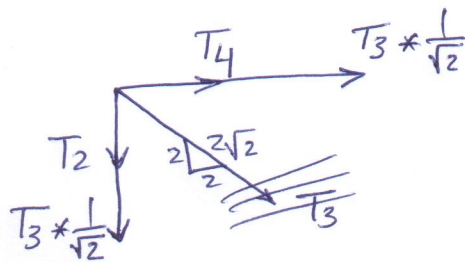
sub. in (1)

For joint (A)



$$\begin{aligned} \rightarrow \sum F_x = 0 & \quad \therefore T_1 = 0 \\ \uparrow \sum F_y = 0 & \quad \therefore N_A + T_2 = 0 & \quad \therefore T_2 = -N_A = -2.05 \text{ KN} \end{aligned}$$

For joint (B)



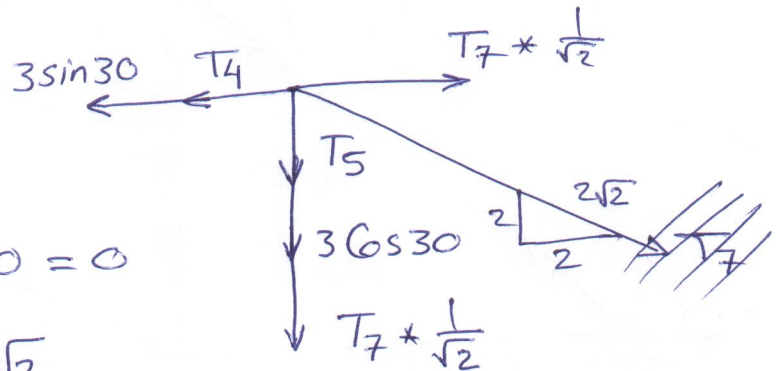
$$\begin{aligned} \downarrow \sum F_y = 0 \\ T_2 + T_3 * \frac{1}{\sqrt{2}} = 0 \end{aligned}$$

$$T_3 = -T_2 * \sqrt{2} = +2.05\sqrt{2} = 2.9 \text{ KN}$$

$$\rightarrow \sum F_x = 0 \quad T_4 + T_3 * \frac{1}{\sqrt{2}} = 0$$

$$T_4 = -T_3 * \frac{1}{\sqrt{2}} = -2.05 \text{ KN}$$

For joint C



$$\rightarrow \sum F_x = 0$$

$$T_7 * \frac{1}{\sqrt{2}} - T_4 - 3 \sin 30 = 0$$

$$T_7 = (T_4 + 1.5) * \sqrt{2}$$

$$= -0.778 \text{ KN}$$

$$+\downarrow \sum F_y = 0$$

$$T_5 + 3 \cos 30 + T_7 * \frac{1}{\sqrt{2}} = 0$$

$$T_5 = -3 \cos 30 + 0.778 * \frac{1}{\sqrt{2}}$$

$$= -2.05 \text{ KN}$$

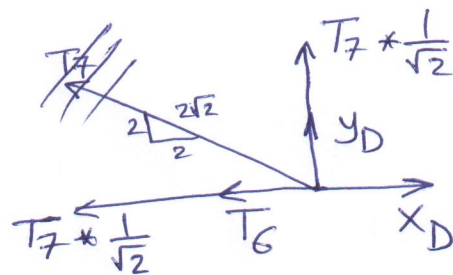
for joint D

$$\rightarrow \sum F_x = 0$$

$$X_D - T_6 - T_7 * \frac{1}{\sqrt{2}} = 0$$

$$T_6 = T_7 * \frac{1}{\sqrt{2}} - X_D$$

$$= -0.778 * \frac{1}{\sqrt{2}} - 1.5 = -2.05 \text{ KN}$$



use $\sum F_y$ for check

$$+\uparrow \sum F_y = y_D + T_7 * \frac{1}{\sqrt{2}}$$

$$= 0.55 + (-0.778) * \frac{1}{\sqrt{2}}$$

$$= 0.0$$

∴ O.K.