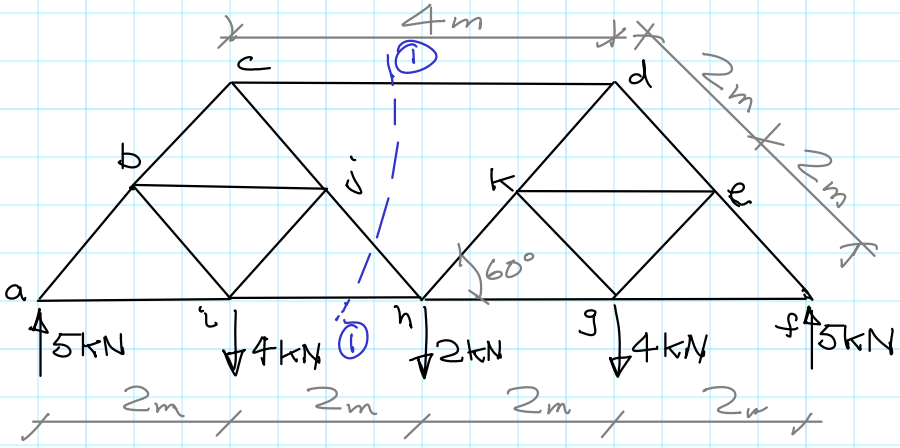
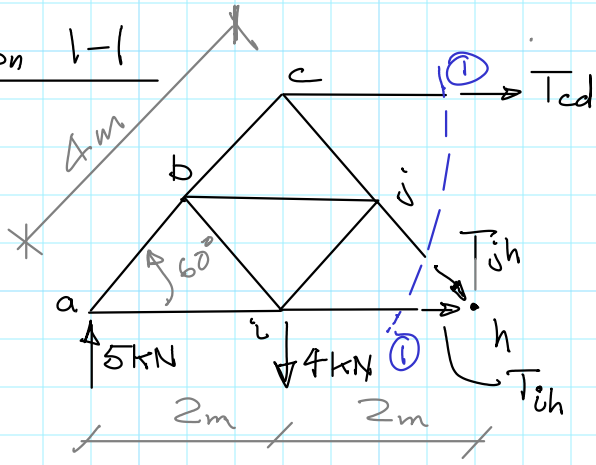
Example T-5 Compound Truss

Reactions @ a & f computed using external equilibrium



Determine all member forces:

Section 1-1



$\Sigma M_h = 0 \quad (+\circlearrowleft)$

$-5 \times 4 + 4 \times 2 - T_{cd} \times 4 \sin 60^\circ = 0$

$T_{cd} = -3.461$ kN (∴ C)

$\Sigma M_c = 0 \quad (+\circlearrowleft)$

$-5 \times 2 + T_{ih} \times 4 \sin 60^\circ = 0$

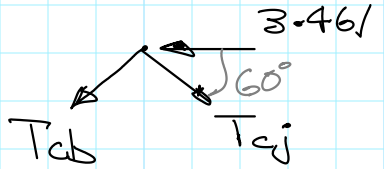
$T_{ih} = 2.887$ kN (∴ T)

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

$5 - 4 - T_{jh} \cos 30^\circ = 0$

$T_{jh} = 1.155$ kN (∴ T)

Joint c



$\Sigma F_y = 0$

$T_{cb} = -T_{cj}$

$\Sigma F_x = 0$

$(-T_{cb} + T_{cj}) \cos 60^\circ - 3.461 = 0$

$2T_{cj} = \frac{3.461}{\cos 60^\circ}$

$T_{cj} = 3.461$ kN (∴ C)

Now proceed:

joint j → $\overline{T}_{bj}$ T_{ij}

joint i → $\overline{T}_{bi}$ $\overline{T}_{ai}$

joint b → $\overline{T}_{ab}$ ✓ check eq.

joint a → check eq

✓ Repeat for other side.