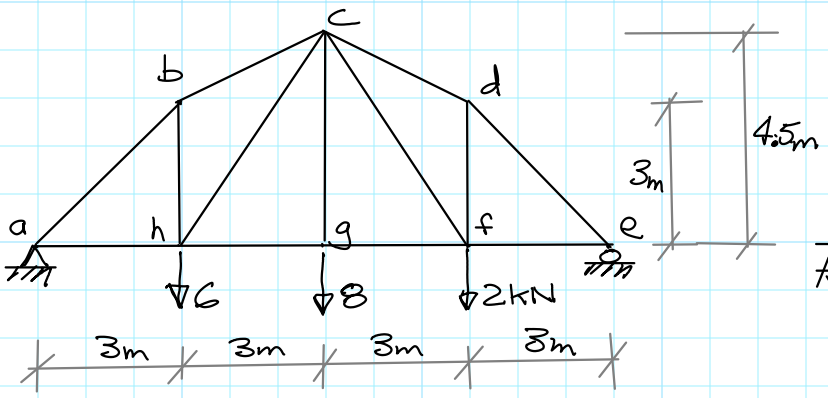
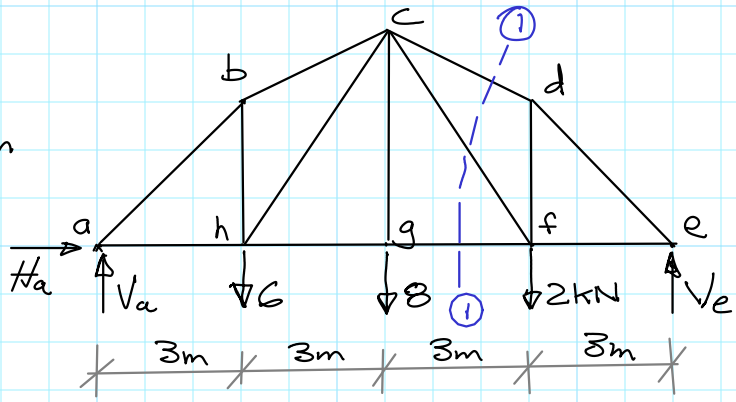
Example T-6

Determine bar forces in cd, cf, gf.





Reactions:

$\Sigma F_x = 0 \rightarrow$ $\quad H_a = 0$

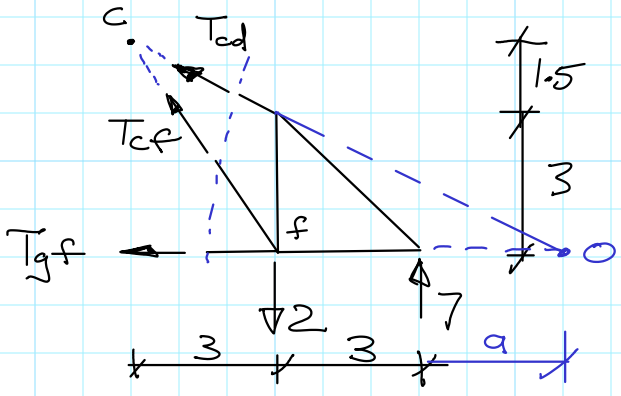
$\Sigma M_a = 0$ (+) $\quad -6\times3 - 8\times6 - 2\times9 + V_e\times12 = 0$

$V_e = 7$ kN

$\Sigma F_y = 0$ +↑ $\quad V_a - 6 - 8 - 2 + 7 = 0$

$V_a = 9$ kN

Section 1-1



$\frac{3+a}{3} = \frac{3}{1.5}$ (similar triangles)

$a = 3$

$\Sigma M_c = 0$ (+)

$-2\times3 + 7\times6 - T_{gf}\times4.5 = 0$

$T_{gf} = 8$ kN (∴ T)

$\Sigma M_f = 0$ (+)

$7\times3 + \frac{3}{\sqrt{11.25}} T_{cd}\times3 = 0$

$T_{cd} = -7.83$ kN (∴ C)

$\Sigma M_o = 0$ (+↑)

$2\times6 - 7\times3 - \frac{4.5}{\sqrt{29.25}} T_{cf}\times6 = 0$

$T_{cf} = -1.80$ kN (∴ C)