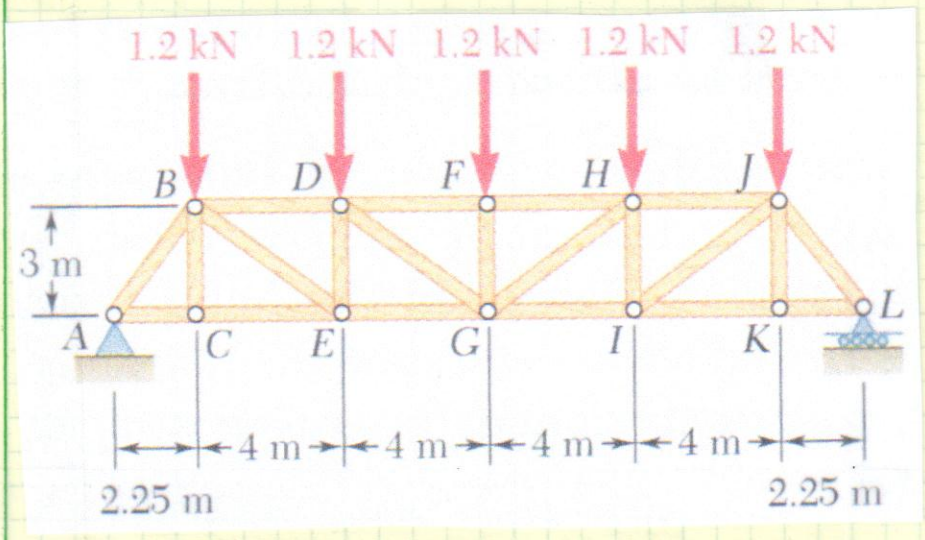
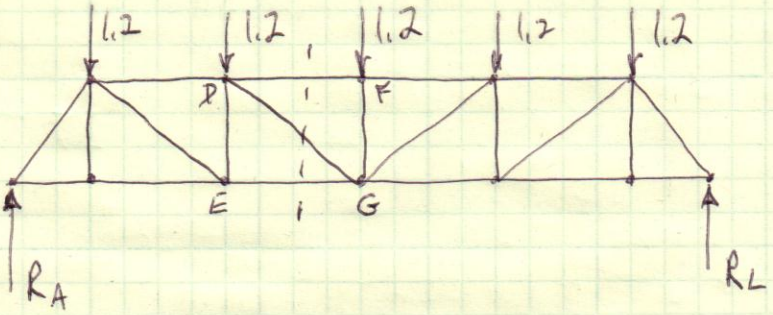
PROB. 6-43

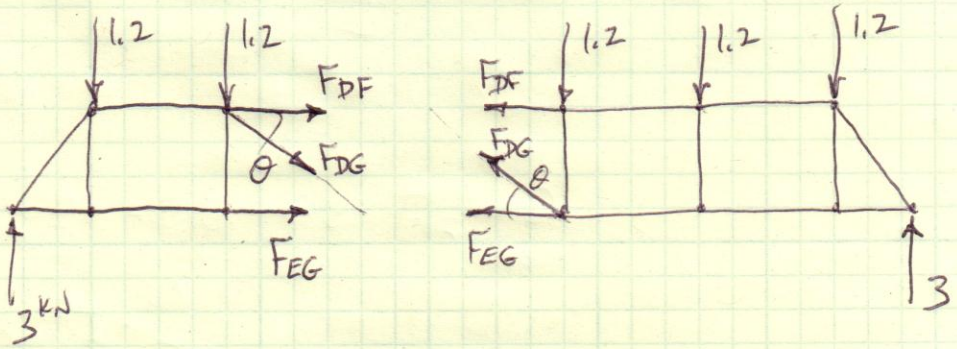


FBD:



$$R_A = R_L = \frac{1}{2}\left[5(1.2^{kN})\right] = 3^{kN}$$

FBD: METHOD OF SECTIONS: USE LHS



$$\vec{F}_{DF} = (F_{DF})\hat{i}\,, \quad \vec{F}_{EG} = (F_{EG})\hat{i}\,, \quad \theta = TAN^{-1}\left(\frac{3}{4}\right) = 36.87^\circ$$

$$\vec{F}_{DG} = (F_{DG}\cdot COS\,36.87^\circ)\hat{i} + (F_{DG}\cdot SIN\,36.87^\circ)\hat{j}$$

$$\vec{F}_{DG} = (0.8F_{DG})\hat{i} + (-0.6F_{DG})\hat{j} \text{ kN}$$

$\Sigma F_x = 0$: $\boxed{F_{DF} + F_{EG} + 0.8F_{DG} = 0}$ EQN. (1)

$\Sigma F_y = 0$: $3 - 1.2 - 1.2 - 0.6F_{DG} = 0$

$\boxed{F_{DG} = 1.0 \text{ kN (T)}}$

$\Sigma M_D = 0 \; +\circlearrowleft$: $-(3 \text{ kN})(6.25 \text{ m}) + (1.2 \text{ kN})(4 \text{ m}) + F_{EG}(3 \text{ m}) = 0$

$\boxed{F_{EG} = 4.65 \text{ kN (T)}}$

EQN. (1): $F_{DF} + (4.65 \text{ kN}) + 0.8(1.0 \text{ kN}) = 0$

$\boxed{F_{DF} = -5.45 \text{ kN (C)}}$