$$\overset{\curvearrowright}{+}\Sigma M_H = 0$$

$$R_{AY}(32) - 300(32) - 600(24) - 600(16) - 600(8) = 0 \quad ; \quad R_{AY} = 1200$$

$$\Sigma F_Y = 0$$

$$R_{AY} - 300 - 600 - 600 - 600 - 300 + R_{HY} = 0 \quad ; \quad R_{HY} = 1200$$

nodo A

$$\Sigma F_Y = 0$$

$$1200 - 300 - \frac{6}{10} F_{AB} = 0$$

$$F_{AB} = 1500$$

$$\Sigma F_X = 0$$

$$F_{AC} - \frac{8}{10} F_{AB} = 0$$

$$F_{AC} = 1200$$

nodo C

$$\Sigma F_X = 0$$

$$-1200 + F_{CE} = 0$$

$$F_{CE} = 1200$$

$$\Sigma F_Y = 0$$

$$F_{CB} = 0$$

nodo B

$$\Sigma F_X = 0$$

$$\frac{8}{10}(1500) - \frac{8}{2\sqrt{17}} F_{BD} - F_{BE}\frac{8}{10} = 0$$

$$1200 - \frac{8}{2\sqrt{17}} F_{BD} = F_{BE}\frac{8}{10}$$

$$F_{BE} = \frac{\left(1200 - \frac{8}{2\sqrt{17}} F_{BD}\right)10}{8}$$

$$F_{BE} = 1500 - \frac{5\sqrt{17}}{17} F_{BD}$$
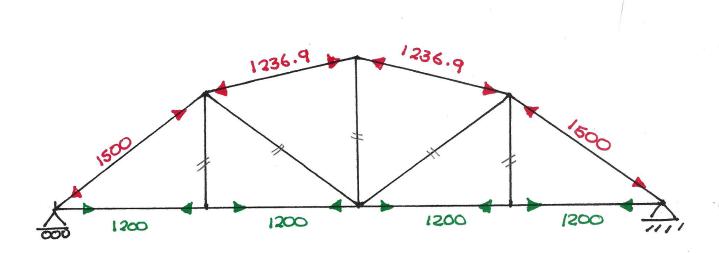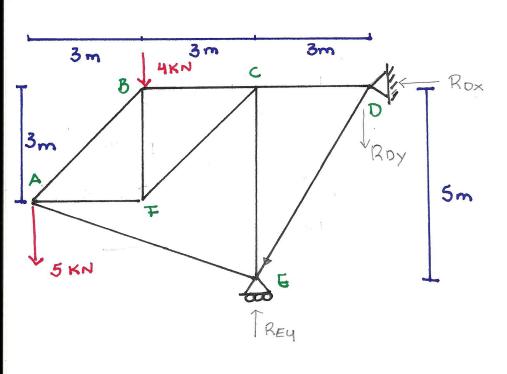
$$\sum F_y = 0$$

$$-600 + F_{BE}\frac{6}{10} - F_{BD}\frac{2}{2\sqrt{17}} + \frac{6}{10}(1500) = 0$$

$$F_{BE} = 1500 - \frac{5\sqrt{17}}{17}(1236.9)$$

$$\left(1500 - \frac{5\sqrt{17}}{17}F_{BD}\right)\frac{6}{10} - F_{BD}\frac{2}{2\sqrt{17}} = -300$$

$$= 0$$

$$900 - \frac{3\sqrt{17}}{17}F_{BD} - F_{BD}\frac{2}{2\sqrt{17}} = -300$$

$$-\frac{4\sqrt{17}}{17}F_{BD} = -1200$$

$$F_{BD} = 1236.9$$

Por simetría

$$F_{AB} = F_{FH} \qquad\qquad F_{BC} = F_{DE} = F_{FG} = 0$$

$$F_{AC} = F_{CE} = F_{EG} = F_{GH} \qquad F_{BD} = F_{DF}$$

$$F_{BE} = F_{EF}$$

Top diagram labels: 3m, 3m, 3m; 3m; B, C, 4KN, Rox, D, RDY, 5m, A, F, 5 KN, E, REY

$$\overset{+}{\curvearrowright}\Sigma M_D = 0$$

$$R_{EY}(3) - 4(6) - 5(9) = 0$$

$$R_{EY} = 23 \text{ KN}$$

$$\Sigma F_y = 0$$

$$R_{EY} - R_{DY} - 4 - 5 = 0$$

$$R_{DY} = +23 - 9 = 14$$

$$\Sigma F_x = 0$$

$$R_{DX} = 0$$

nodo D

$$\Sigma F_y = 0$$

$$-14 + \frac{5}{5.83} F_{DE} = 0$$

$$F_{DE} = \frac{14(5.83)}{5}$$

$$F_{DE} = 16.324 \text{ KN}$$

$$\Sigma F_x = 0$$

$$-F_{DC} + \frac{3}{5.83} F_{DE} = 0$$

$$F_{DC} = 8.4 \text{ KN}$$

F_DC, F_DE, $\frac{5}{5.83}$, $\frac{3}{5.83}$, 14

nodo E

F_EC, $\frac{2}{2\sqrt{10}}$, 16.324 KN, $\frac{5}{5.83}$, F_EA, $\frac{3}{5.83}$, $\frac{6}{2\sqrt{10}}$, 23 KN

$$\Sigma F_x = 0$$

$$-\frac{3}{5.83} F_{DE} + \frac{6}{2\sqrt{10}} F_{EA} = 0$$

$$F_{EA} = \frac{8.4(2\sqrt{10})}{6} = 8.85 \text{ KN}$$
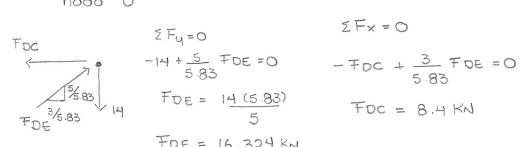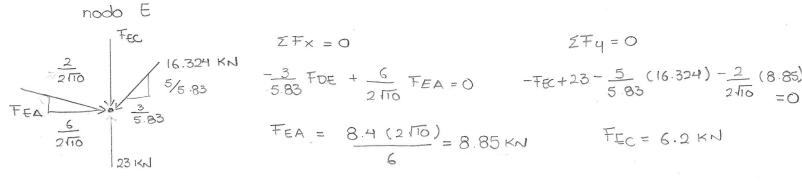
$$\Sigma F_y = 0$$

$$-F_{EC} + 23 - \frac{5}{5.83}(16.324) - \frac{2}{2\sqrt{10}}(8.85) = 0$$

$$F_{EC} = 6.2 \text{ KN}$$

nodo C

$$\Sigma F_x = 0$$

$$-2.2 + 8.4 - \frac{3}{3\sqrt{2}} F_{CF} = 0$$

$$F_{CF} = 8.8 \text{ KN}$$

2.2, 8.4, $\frac{3}{3\sqrt{2}}$, F_CF, $\frac{3}{3\sqrt{2}}$

nodo A

$\frac{3}{3\sqrt{2}}$ FAB

$\frac{3}{3\sqrt{2}}$

→ FAF

5 ↓   8.85

$\Sigma F_y = 0$

$-5 + \frac{2}{2\sqrt{10}}(8.85) + \frac{3}{3\sqrt{2}} F_{AB} = 0$

$F_{AB} = 3.11 \text{ KN}$

$\Sigma F_x = 0$

$+F_{AF} + \frac{3}{3\sqrt{2}} F_{AB} - \frac{6}{2\sqrt{10}}(8.85) = 0$

$F_{AF} = 6.2 \text{ KN}$

nodo B

4 ↓

→ FBC

3.11

FBF

$\Sigma F_x = 0$

$F_{BC} - \frac{3}{3\sqrt{2}}(3.11) = 0$

$F_{BC} = 2.2 \text{ KN}$

$\Sigma F_y = 0$

$F_{BF} - 4 - \frac{3}{3\sqrt{2}}(3.11) = 0$

$F_{BF} = 6.2 \text{ KN}$

$$\overrightarrow{\overset{+}{\Sigma}} \, \Sigma M_L = 0$$

$$R_{Ay}(12) - 1(12) - 2(10) - 2(8) - 1(6) = 0 \; ; \quad R_{Ay} = 4.5 \, KN$$

$$\Sigma F_y = 0$$

$$R_{Ay} - 1 - 2 - 2 - 1 + R_{Ly} = 0 \; ; \quad R_{Ly} = 1.5 \, KN$$

nodo A

$$\Sigma F_x = 0 \qquad\qquad \Sigma F_y = 0$$

$$+F_{AC} \frac{2}{\sqrt{5}} - F_{AB} \frac{2}{2\sqrt{2}} = 0 \qquad -F_{AB} \frac{2}{2\sqrt{2}} + F_{AC} \frac{1}{\sqrt{5}} + 4.5 - 1 = 0$$

$$F_{AC} = \left(+\frac{2}{2\sqrt{2}} F_{AB}\right)\left(\frac{\sqrt{5}}{2}\right) \qquad -F_{AB} \frac{2}{2\sqrt{2}} + \left(+\frac{\sqrt{10}}{4} F_{AB}\right)\frac{1}{\sqrt{5}} + 4.5 - 1 = 0$$

$$F_{AC} = \frac{\sqrt{10}}{4} F_{AB} \qquad\qquad -F_{AB} \frac{2}{2\sqrt{2}} + \frac{\sqrt{2}}{4} F_{AB} + 3.5 = 0$$

$$F_{AC} = \frac{\sqrt{10}}{4}(9.9) = 7.83 \qquad\qquad -\frac{\sqrt{2}}{4} F_{AB} = -3.5$$

$$F_{AB} = +\frac{3.5(4)}{\sqrt{2}} = +9.9 \, KN$$

nodo C

$$\Sigma \bar{F}_x = 0$$

$$-\bar{F}_{AC} \frac{2}{\sqrt{5}} + \bar{F}_{CE} \frac{2}{\sqrt{5}} = 0$$

$$\bar{F}_{AC} = \bar{F}_{CE} = 7.83 \text{ KN}$$

$$\Sigma \bar{F}_y = 0$$

$$7.83 \left(\frac{1}{\sqrt{5}}\right) - 7.83 \left(\frac{1}{\sqrt{5}}\right) + \bar{F}_{CB} = 0$$

$$\bar{F}_{CB} = 0$$

nodo B

$$\Sigma \bar{F}_x = 0$$

$$\bar{F}_{AB} \frac{2}{2\sqrt{2}} - \bar{F}_{BD} \frac{2}{2\sqrt{2}} - \bar{F}_{BE} = 0$$

$$\bar{F}_{BE} = 9.9 \left(\frac{2}{2\sqrt{2}}\right) - 7.1 \frac{2}{2\sqrt{2}}$$

$$\bar{F}_{BE} = 1.99 \approx 2 \text{ KN}$$

$$\Sigma \bar{F}_y = 0$$

$$\bar{F}_{AB} \frac{2}{2\sqrt{2}} - \bar{F}_{BD} \frac{2}{2\sqrt{2}} - 2 = 0$$

$$9.9 \left(\frac{2}{2\sqrt{2}}\right) - \bar{F}_{BD} \frac{2}{2\sqrt{2}} - 2 = 0$$

$$\bar{F}_{BD} = \frac{5 (2\sqrt{2})}{2} = 7.1 \text{ KN}$$

nodo E

$$\Sigma \bar{F}_x = 0$$

$$-\bar{F}_{CE} \frac{2}{\sqrt{5}} + \bar{F}_{EG} \left(\frac{2}{\sqrt{5}}\right) + \bar{F}_{BE} = 0$$

$$\bar{F}_{EG} = \frac{\left(7.83 \left(\frac{2}{\sqrt{5}}\right) - 2\right) \sqrt{5}}{2}$$

$$\bar{F}_{EG} = 5.59 \approx 5.6 \text{ KN}$$

$$\Sigma \bar{F}_y = 0$$

$$\bar{F}_{ED} - \frac{1}{\sqrt{5}} \bar{F}_{CE} + \frac{1}{\sqrt{6}} \bar{F}_{EG} = 0$$

$$\bar{F}_{ED} = \frac{1}{\sqrt{5}} (7.83) - \frac{1}{\sqrt{5}} (5.6) =$$

$$\bar{F}_{ED} = 0.99 \approx 1 \text{ KN}$$

nodo D

$$\Sigma \bar{F}_x = 0$$

$$\bar{F}_{BD} \frac{2}{2\sqrt{2}} - \bar{F}_{DF} \frac{2}{\sqrt{5}} - \bar{F}_{DG} \frac{2}{\sqrt{5}} = 0$$

$$\bar{F}_{DF} = \left(\bar{F}_{BD} \frac{2}{2\sqrt{2}} - \bar{F}_{DG} \frac{2}{\sqrt{5}}\right) \frac{\sqrt{5}}{2}$$

$$\bar{F}_{DF} = \left(7.1 \left(\frac{2}{2\sqrt{2}}\right) - \bar{F}_{DG} \frac{2}{\sqrt{5}}\right) \frac{\sqrt{5}}{2}$$

$$\bar{F}_{DF} = \frac{71\sqrt{10}}{40} - \bar{F}_{DG}$$

$$\bar{F}_{DF} = \frac{71\sqrt{10}}{40} - 0.6 = 5 \text{ KN}$$

$$\Sigma \bar{F}_y = 0$$

$$-2\bar{F}_{BD} \frac{2}{2\sqrt{2}} - \frac{1}{\sqrt{5}} \bar{F}_{DF} + \bar{F}_{DG} \frac{1}{\sqrt{5}} - \bar{F}_{DE} = 0$$

$$7.1 \left(\frac{2}{2\sqrt{2}}\right) - \frac{1}{\sqrt{5}} \left(\frac{71\sqrt{10}}{40} - \bar{F}_{DG}\right)$$

$$+ \bar{F}_{DG} \frac{1}{\sqrt{5}} - 1 - 2 = 0$$

$$+ \frac{1}{\sqrt{5}} \bar{F}_{DG} + \frac{1}{\sqrt{5}} \bar{F}_{DG} - 0.49 = 0$$

$$+ \frac{2\sqrt{5}}{5} \bar{F}_{DG} = +0.49$$

$$\bar{F}_{DG} = 0.55 \approx 0.6$$