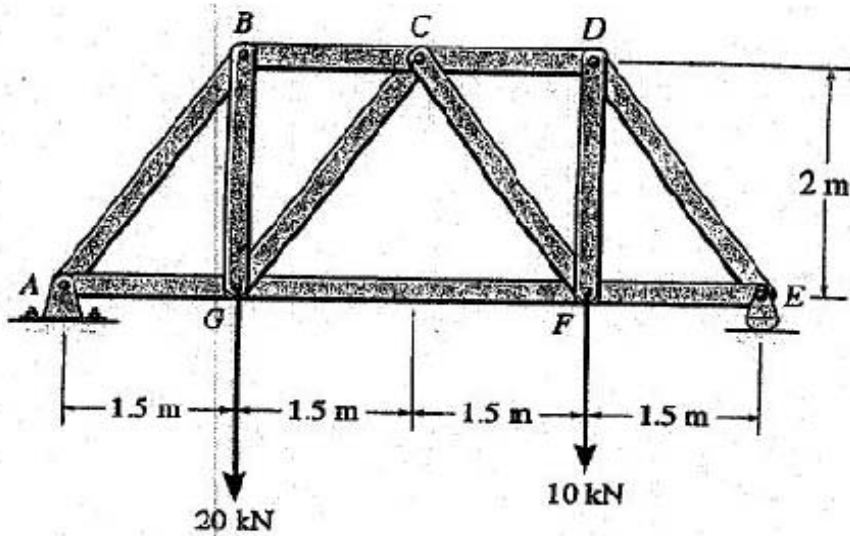


۱۹، ۳، ۸۷

بنام تعادل بخش هستی

خوباً را تحلیل کنید



الف) محاسب نیروهای تکیه گاهی

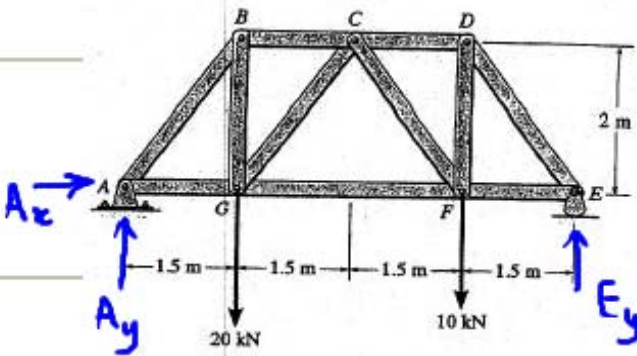
$$\sum M_A = 0 \quad 6E_y - 20 \times 1.5 - 10 \times 4.5 = 0$$

$$E_y = 12.5 \text{ KN}$$

$$\sum F_y = 0 \quad A_y + 12.5 - 20 - 10 = 0$$

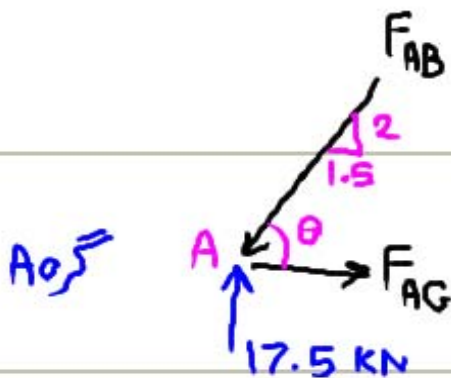
$$A_y = 17.5 \text{ KN}$$

$$\sum F_x = 0 \quad A_x = 0$$



ب) محاسب نیروهای اعضای داخلی (روش گره)

گره A



$$\sum F_y = 0 \quad 17.5 - F_{AB} \sin \theta = 0$$

$$F_{AB} = \frac{17.5}{.8} = 21.875 \text{ KN}$$

$$\sum F_x = 0 \quad F_{AG} - F_{AB} \cos \theta = 0$$

$$F_{AG} = 21.875 \times .6 = 13.125 \text{ KN}$$

2) گره B:

$$\begin{aligned} \rightarrow \sum F_x = 0 \quad & 21.875 \times 0.6 - F_{BC} = 0 \\ & F_{BC} = 13.125 \text{ kN} \\ \uparrow \sum F_y = 0 \quad & 21.875 \times 0.8 - F_{BG} = 0 \\ & F_{BG} = 17.5 \text{ kN} \end{aligned}$$

3) گره G:

$$\begin{aligned} \uparrow \sum F_y = 0 \quad & 17.5 + F_{GC} \times 0.8 - 20 = 0 \\ & F_{GC} = 3.125 \text{ kN} \\ \rightarrow \sum F_x = 0 \quad & F_{GF} + 3.125 \times 0.6 - 13.125 = 0 \\ & F_{GF} = 11.25 \text{ kN} \end{aligned}$$

4) گره C:

$$\begin{aligned} \uparrow \sum F_y = 0 \quad & F_{CF} \times 0.8 = 3.125 \times 0.8 \\ & F_{CF} = 3.125 \text{ kN} \\ \rightarrow \sum F_x = 0 \quad & 13.125 - F_{CD} - 3.125 \times 0.6 \times 2 = 0 \\ & F_{CD} = 9.375 \text{ kN} \end{aligned}$$

5) گره F:

$$\begin{aligned} \uparrow \sum F_y = 0 \quad & F_{FD} - 3.125 \times 0.8 - 10 = 0 \\ & F_{FD} = 12.5 \text{ kN} \\ \rightarrow \sum F_x = 0 \quad & 3.125 \times 0.6 - 11.25 + F_{FE} = 0 \\ & F_{FE} = 9.375 \text{ kN} \end{aligned}$$

