

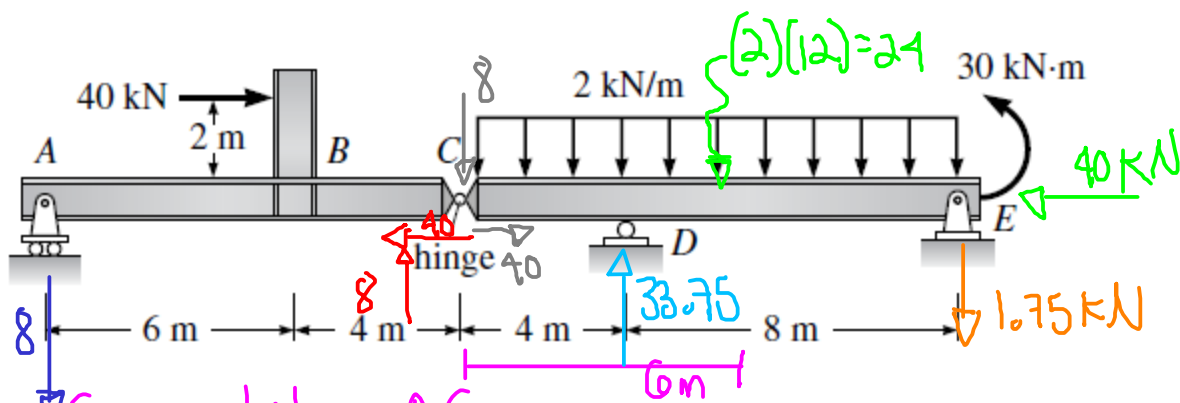
$$\begin{aligned} \sum M_A &= 12(3) \\ &\quad - 18(2) + G_y(12) \\ &= 0 \\ G_y &= 0 \end{aligned}$$

$$\sum F_y = A_y - 12 + 0 = 0 \rightarrow A_y = 12 \uparrow$$

Tramo AD

$$\sum M_D = 12(3) + A_x(4) - 12(6) = 0 \rightarrow A_x = 9 \text{ kN} \rightarrow$$

$$\sum F_x = 9 - 18 + G_x = 0 \rightarrow G_x = 9 \text{ kN} \rightarrow$$



Cuerpo Libre AC

$$\sum M_C = 40(2) - A_y(10) = 0 \rightarrow A_y = 8 \text{ kN} \downarrow$$

Cuerpo Libre CE

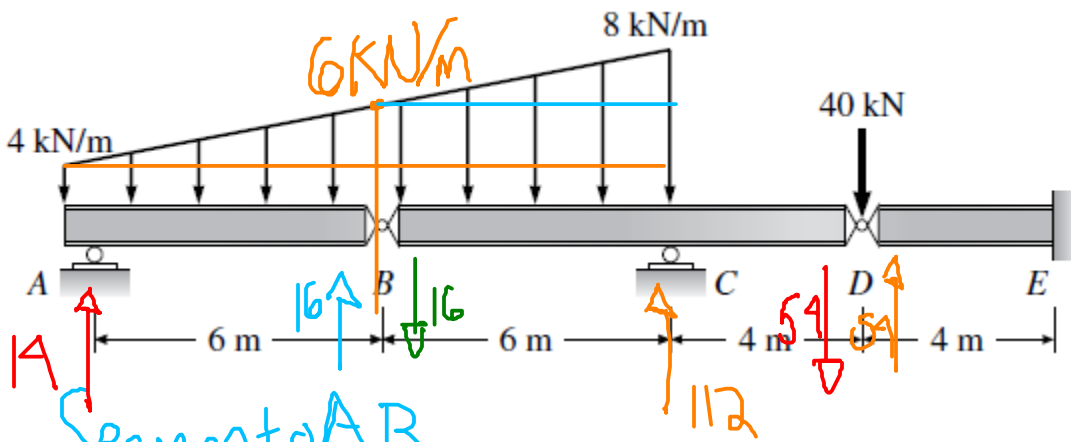
$$\begin{aligned} \sum M_D &= 8(4) - 24(2) + 30 + E_y(8) = 0 \\ E_y &= 1.75 \downarrow \end{aligned}$$

$$\sum F_y = -8 - 24 - 1.75 + D_y = 0$$

$$D_y = 33.75 \text{ kN} \uparrow$$

$$\sum F_x = 40 - E_x = 0$$

$$\rightarrow E_x = 40 \text{ kN} \leftarrow$$



Segmento AB

$$\sum M_B = A_y(6) - (6)(4)\left(\frac{5}{2}\right) - \frac{1}{2}(6)(2)\left(\frac{1}{3} \cdot 6\right) = 0$$

$$A_y = 14 \text{ kN} \uparrow$$

$$\sum F_y = 14 - 4(6) - \frac{1}{2}(6)(2) + B_y = 0 \rightarrow B_y = 16 \text{ kN} \uparrow$$

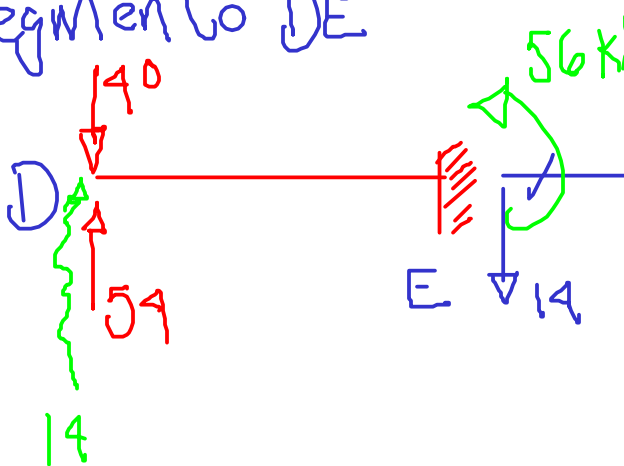
Segmento BD

$$\sum M_D = -16(10) - 6(6)\left(\frac{6}{2} + 4\right) - \frac{1}{2}(6)(2)\left(\frac{1}{3} \cdot 6 + 4\right) - C_y(4) = 0$$

$$C_y = 112 \text{ kN} \uparrow$$

$$\sum F_y = -16 - 6(6) - \frac{1}{2}(6)(2) + 112 + D_y = 0 \quad D_y = 54 \downarrow$$

Segmento DE



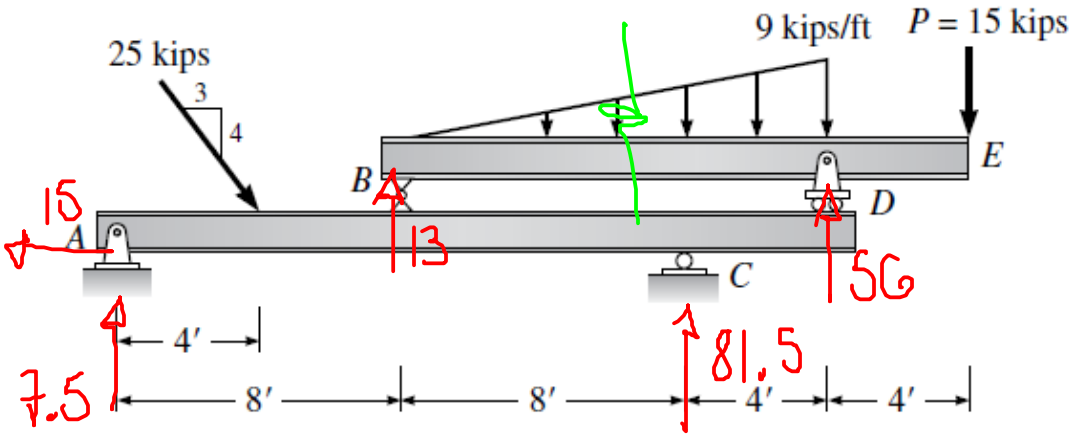
$$\sum F_y = 54 - 40 - E_y = 0$$

$$E_y = 14 \downarrow$$

$$\sum M_E = 14(4) - M_E = 0$$

$$M_E = 56 \curvearrowright$$

Diagrams



$$y = mx + b$$

$$h = \frac{9}{12}x + 0$$

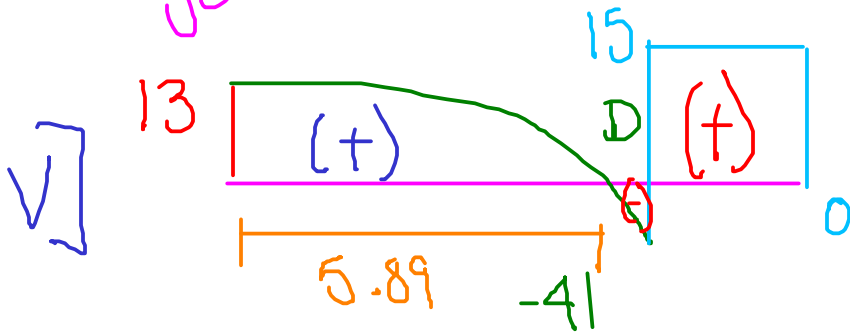
$$h = \frac{3}{4}x$$

$$\frac{1}{2}(12)(9) = 54$$

$$13 - 54 = -41$$

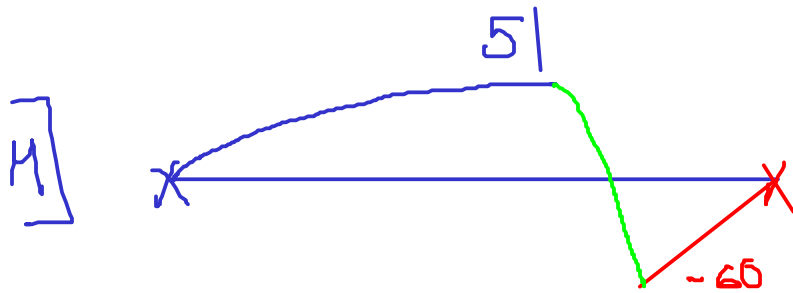
$$-41 + 56 = 15$$

Viga BE



$$A = \frac{1}{2}(x)\left(\frac{3}{4}x\right) = \frac{3x^2}{8} = 13 \rightarrow x = 5.89$$

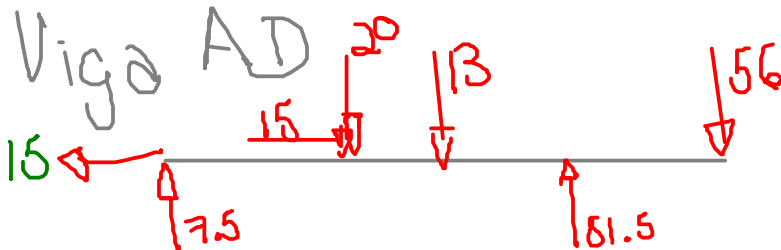
$$A = \frac{1}{2}(5.89)\left(\frac{3}{4} \cdot 5.89\right) = 13$$

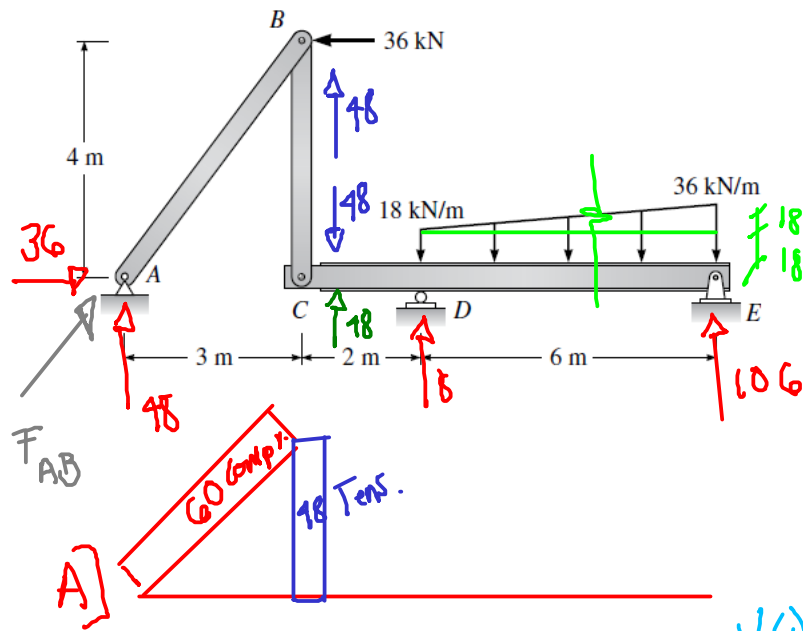
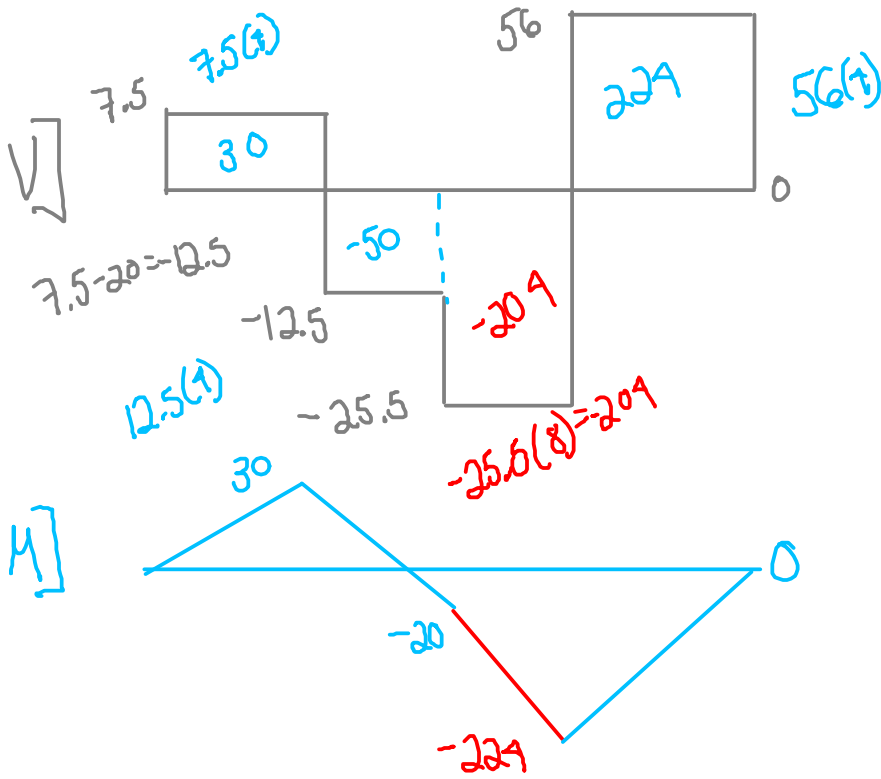


$$\frac{2}{3}(5.89)(13) = 51$$

$$-15(4) = -60$$

Viga AD





$$F_{AB} = \sqrt{36^2 + 48^2} = 60$$

$$\frac{1}{2}(2.56)(3 \cdot 2.56) + 18(2.56) = 56$$

$$y = mx + b$$

$$\frac{18}{6}x + 0 = 3x$$

$$V(x) \rightarrow 56 - 18x - \frac{1}{2}(x)(3x) = 0$$

$$56 - 18x - 1.5x^2 = 0$$

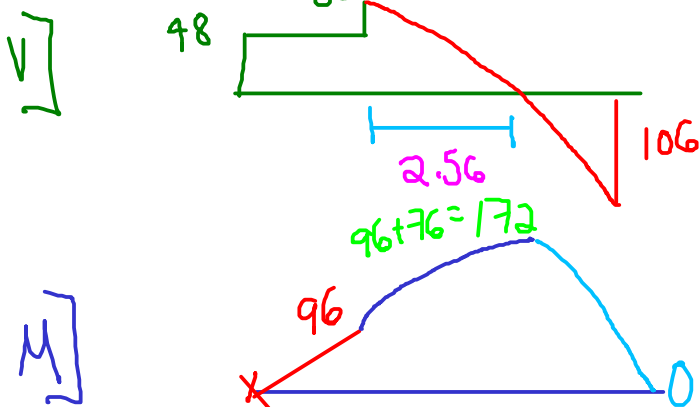
$$x_1 = 2.56 \checkmark$$

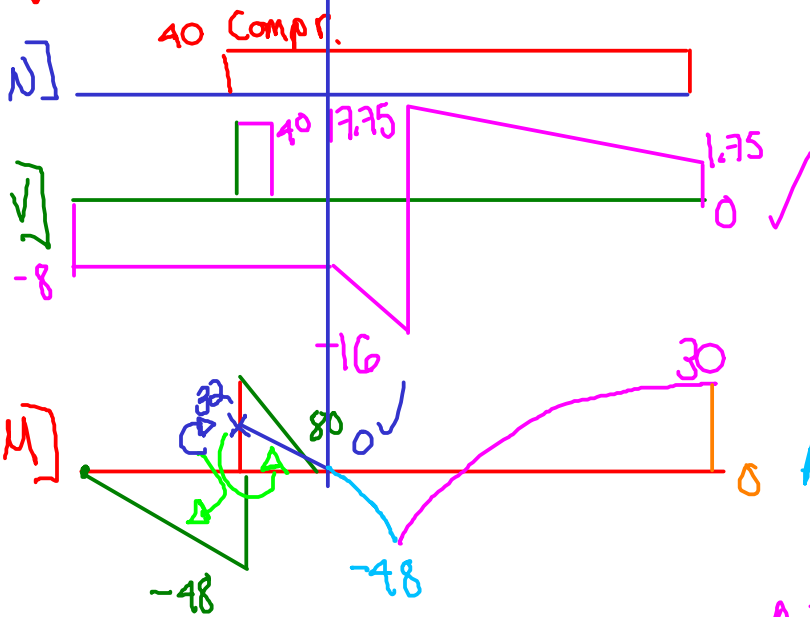
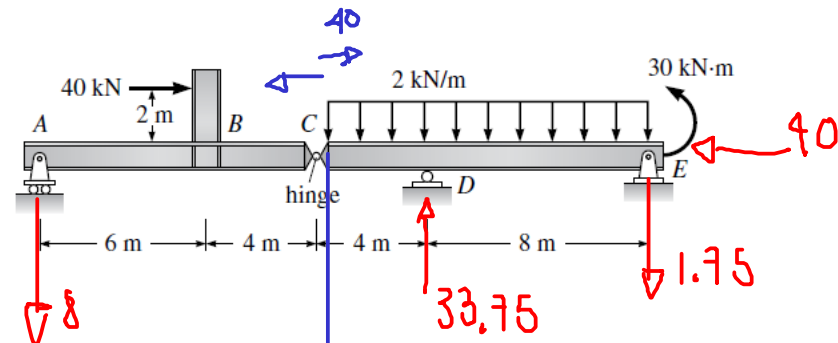
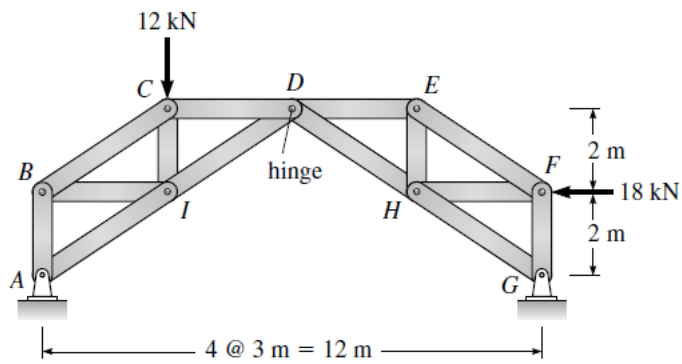
$$x_2 = -14.56$$

$$\int V(x) dx \rightarrow \int 56 - 18x - 1.5x^2 dx$$

$$56x - 9x^2 - \frac{1.5x^3}{3} \Big|_0^{2.56} = 76$$

$$\int_{2.56}^6 V(x) = -172 \checkmark$$





$$80 - 48 = 32$$

$$A = \left(\frac{B + b}{a} \right) h = \left(\frac{16 + 8}{8} \right) (4) = 48$$

$$A = \left(\frac{17.75 + 1.75}{8} \right) (8) = 78$$