



$$F_C := [0 \ 0 \ 10]^T \cdot \text{kN} \quad F_A := [0 \ 0 \ -30]^T \cdot \text{kN} \quad F_B := [0 \ 0 \ -50]^T \cdot \text{kN}$$

$$r_C := [0 \ -0.4 \ 0]^T \cdot \text{m} \quad r_A := [0.4 \ 0 \ 0]^T \cdot \text{m} \quad r_B := [-0.4 \ 0.2 \ 0]^T \cdot \text{m}$$

$$\begin{bmatrix} M_x \\ M_y \\ M_z \end{bmatrix} := r_A \times F_A + r_B \times F_B + r_C \times F_C = \begin{bmatrix} -14 \\ -8 \\ 0 \end{bmatrix} \text{m} \cdot \text{kN}$$

$$F_R := F_A + F_B + F_C = \begin{bmatrix} 0 \\ 0 \\ -70 \end{bmatrix} \text{kN}$$

$$x := \frac{M_y}{F_{R_2}} = 0.114 \text{ m}$$

$$y := \frac{M_x}{F_{R_2}} = 0.2 \text{ m}$$

$$\begin{bmatrix} x \\ y \\ 0 \cdot \text{m} \end{bmatrix} \times F_R = \begin{bmatrix} -14 \\ 8 \\ 0 \end{bmatrix} \text{m} \cdot \text{kN}$$

Sign error

$$M := [M_x \ M_y \ M_z]^T = \begin{bmatrix} -14 \\ -8 \\ 0 \end{bmatrix} \text{m} \cdot \text{kN}$$

Guess Values

$$P := [1 \ 1 \ 0]^T \cdot \text{m}$$

its

Constrain

$$F_R \times P = [M_x \ M_y \ M_z]$$

Solver

$$\mathbf{P} := \mathbf{Find}(P) = \begin{bmatrix} 0.114 \\ -0.2 \\ 0 \end{bmatrix} \mathbf{m}$$

Check:

$$F_R \times \mathbf{P} = \begin{bmatrix} -14 \\ -8 \\ 0 \end{bmatrix} \mathbf{m} \cdot \mathbf{kN} \quad M = \begin{bmatrix} -14 \\ -8 \\ 0 \end{bmatrix} \mathbf{m} \cdot \mathbf{kN}$$