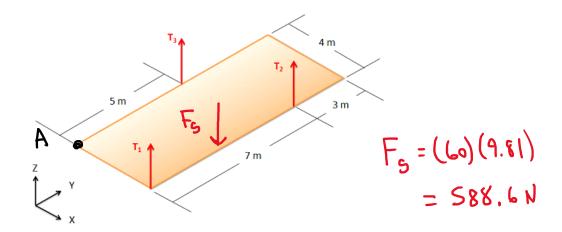
Question 8

A sixty kilogram acoustic panel is suspended by three cables as shown below. Assuming the panel has a uniformly distributed weight, what is the tension in each of the cables?



The moments about A

$$\vec{M}_{T_1} = \begin{bmatrix} 4,0,0 \end{bmatrix} \times \begin{bmatrix} 0,0,T_1 \end{bmatrix} = \begin{bmatrix} 0,-4T_1,0 \end{bmatrix}$$

$$\vec{M}_{T_2} = \begin{bmatrix} 4,7,0 \end{bmatrix} \times \begin{bmatrix} 0,0,T_2 \end{bmatrix} = \begin{bmatrix} 7T_2,-4T_2,0 \end{bmatrix}$$

$$\vec{M}_{T_3} = \begin{bmatrix} 0,5,0 \end{bmatrix} \times \begin{bmatrix} 0,0,T_3 \end{bmatrix} = \begin{bmatrix} 5T_5,0,0 \end{bmatrix}$$

$$\vec{M}_{F_3} = \begin{bmatrix} 2,5,0 \end{bmatrix} \times \begin{bmatrix} 0,0,-588.6 \end{bmatrix} = \begin{bmatrix} -2943,1177,0 \end{bmatrix}$$

$$\vec{M}_{K_3} = 7T_2 + 5T_3 - 2943 = 0$$

$$\vec{M}_{K_3} = 7T_2 + 7T_2 + 1177 = 0$$

plus into equation solver

$$T_1 = 84.1 \text{ N}$$
 $T_2 = 210.2 \text{ N}$
 $T_3 = 294.4 \text{ N}$