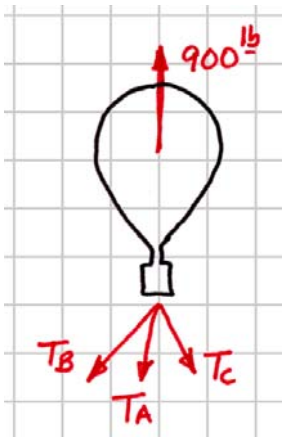
1-25*

The components of the three tension forces are



$$\mathbf{T}_A = T_A \frac{20\mathbf{i} + 30\mathbf{j} - 50\mathbf{k}}{\sqrt{20^2 + 30^2 + 50^2}}$$
$$= 0.32444T_A\mathbf{i} + 0.48666T_A\mathbf{j} - 0.81111T_A\mathbf{k}$$

$$\mathbf{T}_B = T_B \frac{16\mathbf{i} - 25\mathbf{j} - 50\mathbf{k}}{\sqrt{16^2 + 25^2 + 50^2}}$$
$$= 0.27517T_B\mathbf{i} - 0.42995T_B\mathbf{j} - 0.85990T_B\mathbf{k}$$

$$\mathbf{T}_C = T_C \frac{-25\mathbf{i} - 15\mathbf{j} - 50\mathbf{k}}{\sqrt{25^2 + 15^2 + 50^2}}$$
$$= -0.43193T_C\mathbf{i} - 0.25916T_C\mathbf{j} - 0.86387T_C\mathbf{k}$$

Then the x-, y-, and z-components of the force equilibrium equation give

x: $0.32444T_A + 0.27517T_B - 0.43193T_C = 0$

y: $0.48666T_A - 0.42995T_B - 0.25916T_C = 0$

z: $-0.81111T_A - 0.85990T_B - 0.86387T_C + 900 = 0$

$T_A = 418.214 \text{ lb} \cong 418 \text{ lb}$ ..... **Ans.**

$T_B = 205.219 \text{ lb} \cong 205 \text{ lb}$ ..... **Ans.**

$T_C = 444.876 \text{ lb} \cong 445 \text{ lb}$ ..... **Ans.**