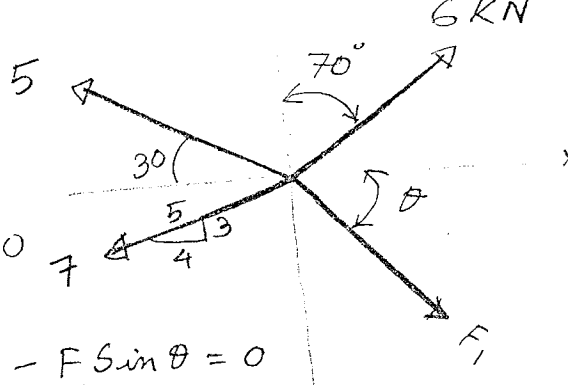


$\Sigma F_x = 0$

$6 \sin 70^\circ + F_1 \cos\theta - 5\cos 30 - \frac{7}{5} * 4 = 0$

$\Rightarrow F_1 \cos\theta = 4.29 \quad \cdots (1)$

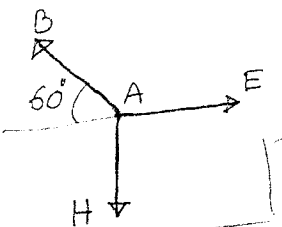
$\Sigma F_y = 0 \Rightarrow 6\cos 70^\circ + 5 \sin 30 - \frac{7}{5} * 3 - F \sin\theta = 0$

$\Rightarrow F_1 \sin\theta = 0.352 \quad \cdots (2)$

$(1)^2 + (2)^2 \Rightarrow F_1 = \sqrt{(4.29)^2 + (0.352)^2}$

$= \underline{4.3 \text{ kN}}$

$(2) \div (1) \Rightarrow \theta = \tan^{-1}\left(\frac{.352}{4.29}\right) = \underline{4.7^\circ}$



$\Sigma F_x = 0 \Rightarrow T_{AE} = T_{AB} \cos 60^\circ$

$\Sigma F_y = 0 \Rightarrow T_{AH} = T_{AB} \sin 60^\circ \quad \therefore T_{AB} = 1.154\, T_{AH}$

$\Sigma F_y = 0$

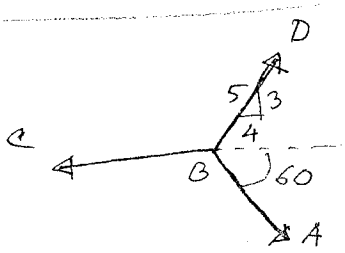
$\Rightarrow \frac{T_{BD}}{5} * 3 = T_{BA} \sin 60^\circ$

$\Rightarrow T_{BD} = \frac{5}{3}(1.154\, T_{AH}) \sin 60^\circ$

$= 1.66\, T_{AH}$

$T_{AE} = (1.154)\, T_{AH} * \cos 60$

$= 0.577\, T_{AH}$



$T_{BD} * \frac{4}{5} + T_{AB} \cos 60^\circ$

$66)\, T_{AH} * \frac{4}{5}$

$+ (1.154\, T_{AH}) \cos 60^\circ$

$= 1.9\, T_{AH}$

e set

$T_{AB} = 1.154\, T_{AH}$

$T_{BD} = 1.66\, T_{AH}$

$T_{AE} = 0.577\, T_{AH}$

$T_{CB} = 1.9\, T_{AH}$

Max^m value

$T_{CB} = 1.9\, T_{AH}$

$\Rightarrow 500 = 1.9\, T_{AH}$

$\Rightarrow T_{AH} = 263\text{ N}$

$\therefore W = \frac{269}{9.8} = \underline{26.8 \text{ kg}}$