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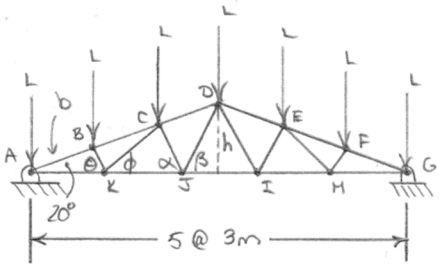


$h = \frac{15}{2}\tan 20^\circ \longrightarrow h = 2.73\ \text{m}$

$\overline{AD} = \frac{h}{\sin 20^\circ} = \frac{2.73}{\sin 20^\circ} \longrightarrow \overline{AD} = 7.98\ \text{m}$

$b = \frac{1}{3}\overline{AD} = \frac{1}{3}(7.98) \longrightarrow b = 2.66\ \text{m}$

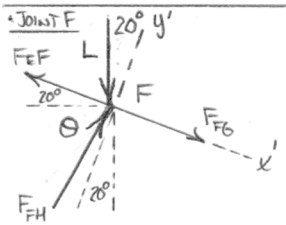
$\theta = \tan^{-1}\left(\frac{b\sin 20^\circ}{3 - b\cos 20^\circ}\right) \longrightarrow \theta = 61.2^\circ$

$\phi = \tan^{-1}\left(\frac{2b\sin 20^\circ}{2b\cos 20^\circ - 3}\right) \longrightarrow \phi = 42.3^\circ$

$\alpha = \tan^{-1}\left(\frac{2b\sin 20^\circ}{6 - 2b\cos 20^\circ}\right) \longrightarrow \alpha = 61.2^\circ$

$\beta = \tan^{-1}\left(\frac{h}{1.5}\right) \longrightarrow \beta = 61.2^\circ$

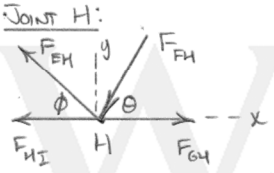
Joint F



$\Sigma F_{y'} = 0: \quad F_{FH}\cos(90^\circ - 20^\circ - \theta) - L\cos 20^\circ = 0$

$F_{FH} = 0.951L \quad C$

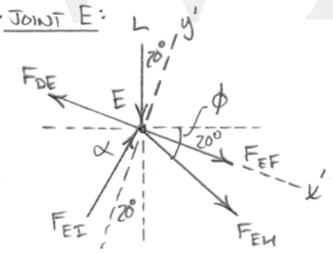
Joint H:



$\Sigma F_y = 0: \quad F_{EH}\sin\phi - F_{FH}\sin\theta = 0$

$F_{EH} = 1.238L \quad T$

Joint E:



$\Sigma F_{y'} = 0: \quad F_{EI}\cos(90^\circ - \alpha - 20^\circ) - L\cos 20^\circ - F_{EH}\sin(\phi - 20^\circ) = 0$

$F_{EI} = 1.426L \quad C$