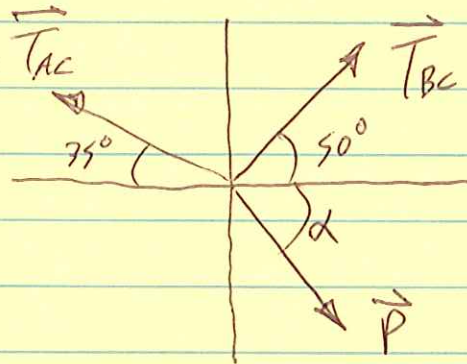


PROB. 2.58

$T_{AC} = 1200^N$, $T_{BC} = 600^N$, FIND P_{max} , α



$\theta_1 = 50^\circ$

$\theta_2 = 180 - 35 = 145^\circ$

$\vec{T}_{BC} = (600 \cdot \cos 50^\circ) \hat{i} + (600 \cdot \sin 50^\circ) \hat{j} = (385) \hat{i} + (460) \hat{j}^N$

$\vec{T}_{AC} = (1200 \cdot \cos 145^\circ) \hat{i} + (1200 \cdot \sin 145^\circ) \hat{j} = (-983) \hat{i} + (688) \hat{j}^N$

$\vec{P} = (P \cos \alpha) \hat{i} + (-P \sin \alpha) \hat{j}$

$\sum F_x = 0: 385 - 983 + P \cos \alpha = 0$, $P \cos \alpha = 598$

$\sum F_y = 0: 460 + 688 - P \sin \alpha = 0$, $P \sin \alpha = 1148$

$\frac{P \sin \alpha}{P \cos \alpha} = \tan \alpha = \frac{1148}{598}$, $\alpha = \tan^{-1} \left(\frac{1148}{598} \right) = 62.5^\circ$

$P = \frac{598}{\cos 62.5^\circ} = 1294^N$