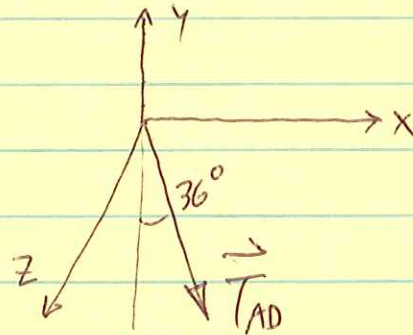
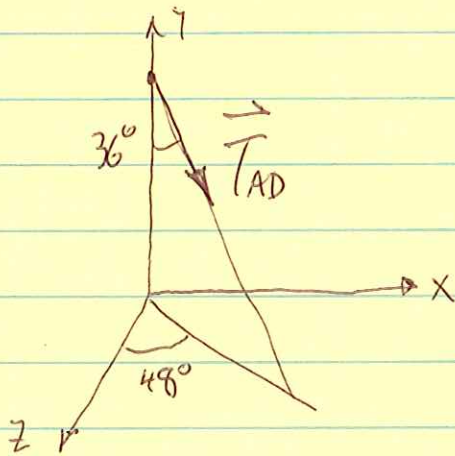


PROB. 2.74

$T_{AD} = 85 \text{ lb}$, FIND \vec{T}_{AD} , DIRECTION ANGLES



$$\theta_y = 180 - 36 = 144^\circ, \quad \phi = 90 - 48 = 42^\circ$$

$$F_y = F \cdot \cos \theta_y = 85 \cdot \cos 144^\circ = -68.8 \text{ lb}$$

$$F_x = F \cdot \sin \theta_y \cdot \cos \phi = 85 \cdot \sin 144^\circ \cdot \cos 42^\circ = 37.1 \text{ lb}$$

$$F_z = F \cdot \sin \theta_y \cdot \sin \phi = 85 \cdot \sin 144^\circ \cdot \sin 42^\circ = 33.4 \text{ lb}$$

$$\theta_x = \cos^{-1} \left(\frac{F_x}{F} \right) = \cos^{-1} \left(\frac{37.1}{85} \right) = 64.1^\circ$$

$$\theta_z = \cos^{-1} \left(\frac{F_z}{F} \right) = \cos^{-1} \left(\frac{33.4}{85} \right) = 66.9^\circ$$