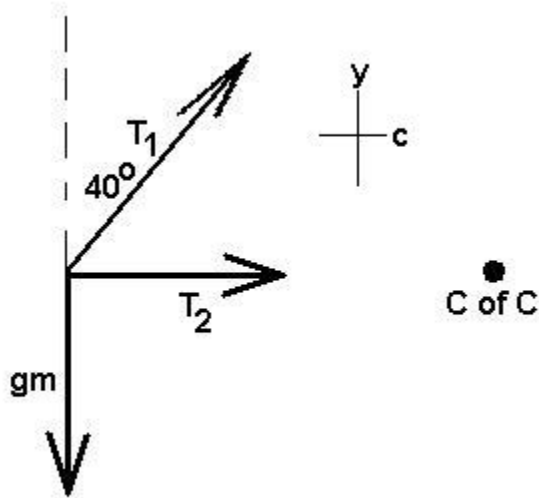


5-1)



Convert quantities: $\omega = (32 \text{ rev/min} * 1\text{min}/60\text{sec} * 2\pi\text{rad/rev}) = 3.35 \text{ rad/s}$

Use NII:

c: $T_2 + T_1 \sin \theta = m a_c = m r \omega^2$

y: $T_1 \cos \theta - g m = m a_y = 0$

Solve the y eq for T_1 :

$$T_1 = g m / \cos \theta = 1080 / \cos 40^\circ = 1436 \text{ N}$$

Solve the c eq for T_2 :

$$T_2 = m r \omega^2 - T_1 \sin \theta = m r \omega^2 - T_1 \sin \theta = 110 * 7.5 * 3.35^2 - 1436 * \sin 40^\circ = 8335 \text{ N}$$