

### Problem P9

Puffy the cat is peacefully sitting on a chair as shown when her arch enemy Fido pulls on the rope as shown. Puffy weighs 8 lbs and the chair weighs 14 lbs. The centers of gravity of the cat,  $G_{\text{cat}}$ , and of the chair,  $G_{\text{chair}}$  are shown. Assume the wheels allow the chair to roll freely (that is no friction).

- Determine the magnitude of the force in the rope so that the chair and cat are about to tip over (much to Fido's delight) assuming the cat does not move relative to the chair.
- Determine the friction force between the cat and the chair assuming the coefficients of friction are  $\mu_s = 0.5$  and  $\mu_k = 0.3$

