PHY2048C. Solutions to
Practice Quiz 2.

Problem 1: No hinge is specified so axis of rotation = CM

   a: Both torques are negative, they cannot cancel.
   b: All   ll   ll   positive;   ll   ll   ll

$\boxed{c,d,e,f}$:

Problem 2: $\sum F_x = 0$ $\sum F_y = 0$, $\sum \tau = 0$

$$F - 1000 + P_x = 0 \quad \Big| \quad P_y - 2000 = 0$$

$$\boxed{P_x = 0} \qquad \boxed{P_y = 2000} \Big| -2_m(F) + 2(2000)$$

$$-(3)(2000) = 0$$

$$\boxed{F = 1000 \text{ N}}$$

Problem 3:

(a) $\vec{L} = md(vt_y)(-\hat{i} \times -\hat{j}) = md(v_y)\hat{k} = md(gt)\hat{k}$

(b) $\vec{\tau}_z = \vec{r} \times \vec{F} = d\,mg\,(-\hat{i} \times \hat{j}) = dmg\,\hat{k}$

(c) $\boxed{\dfrac{d\vec{L}}{dt} = \dfrac{d(md\,gt\hat{k})}{dt} = mdg\,\hat{k} = \vec{\tau}_z}$ yes