Solution:

Q1). A sphere of radius R and mass M is released at rest at the top of a ramp inclined at an angle θ with the horizontal.

a)

b)
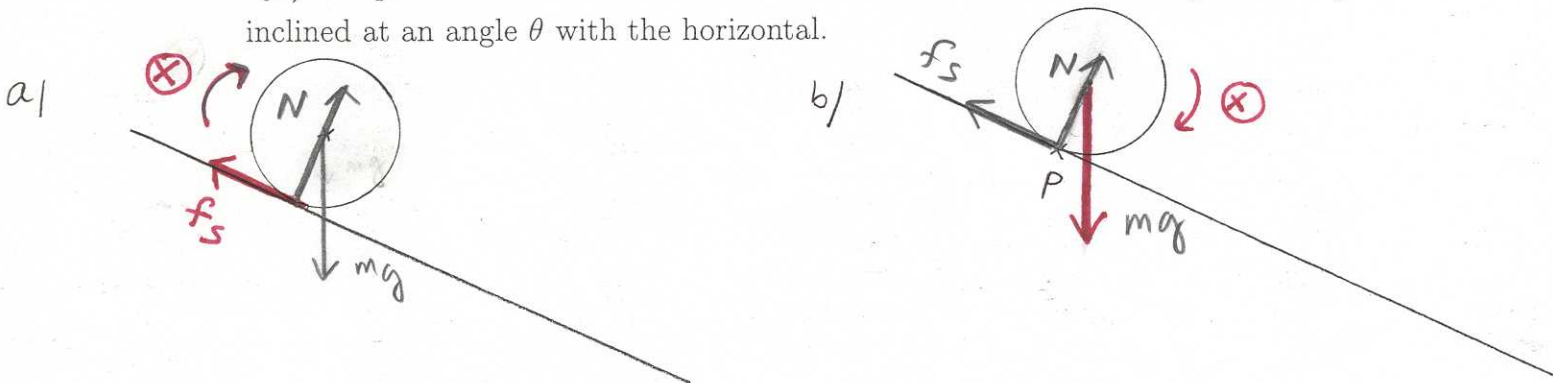
a). List the force(s) that exert a torque on the sphere about the center of mass. State also the direction (into the page or out of the page) of each of those torques.

only f_s applies a torque — Its into the page ⊗.
mg doesn't apply a torque because $\vec{r} = 0$ — $\vec{N}$ doesn't apply a torque because $\vec{r}$ & $\vec{N}$ make a $180°$ angle —

b). List the force(s) that exert a torque about P, the instantaneous point of contact together with the direction of each torque.

Only mg applies a torque. Its into the page ⊗.
f_s doesn't apply a torque because $\vec{r} = 0$. $\vec{N}$ also doesn't apply a torque because $\vec{r} = 0$.

c). The moment of inertia of the sphere about its center of mass is $I_{c.m.} = 2/5MR^2$. What is the moment of inertia about P?

$$I_P = I_{c.m} + Mh^2$$

$$= \frac{2}{5}MR^2 + MR^2$$

$$\boxed{I_P = \frac{7}{5}MR^2}$$