

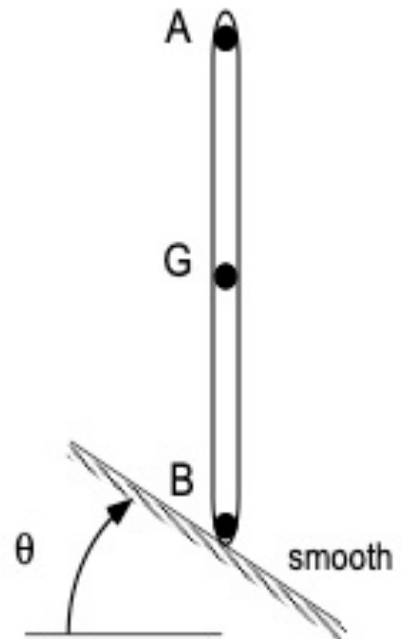
Quiz07 – 11:30 section

ME 274 – Spring 2024

Problem 1

Choose the statement below that most accurately describes the Newton/Euler equations for the bar below, where G is the center of mass of the bar.

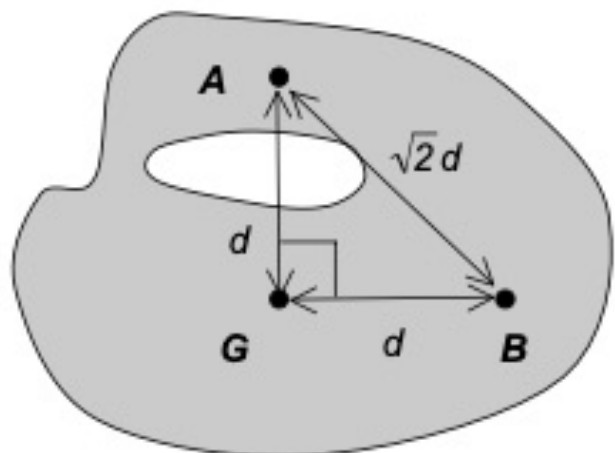
- (a) $\sum \vec{F} = m\vec{a}_G$ and $\sum \vec{M}_A \neq I_G\vec{\alpha}$
- (b) $\sum \vec{F} = m\vec{a}_G$ and $\sum \vec{M}_A \neq I_A\vec{\alpha}$
- (c) $\sum \vec{F} \neq m\vec{a}_A$ and $\sum \vec{M}_G = I_G\vec{\alpha}$
- (d) All of the above
- (e) None of the above



Problem 2

The rigid body shown below has its center of mass at G. Choose the answer below that most accurately describes the mass moment of inertia of the body about B.

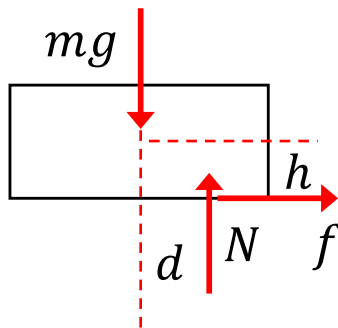
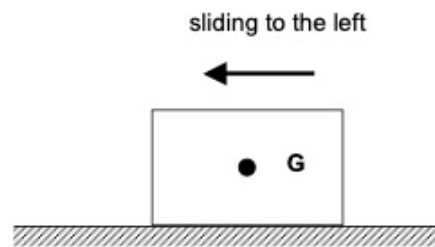
- (a) $I_B = 0$
- (b) $I_B = I_G$
- (c) $I_B = I_A$
- (d) $I_B = I_A + m(\sqrt{2}d)^2$
- (e) None of the above



Problem 3

A block with center of mass G slides to the left on a rough horizontal surface. Choose the answer below that most accurately describes the location of the normal force on the block from the ground as the block slide.

- (a) The normal force acts at a point to the left of G
- (b) The normal force acts at a point to the right of G
- (c) The normal force acts at a point directly beneath G
- (d) More information is needed to answer this question



$$\sum M_G = Nd + fh = I_G \alpha = 0 \Rightarrow$$
$$d = -\frac{f}{N}h \Rightarrow \text{to the left}$$