

Name: _____

Solution

Quiz #10

(10 points; 5 minutes)

Full credit will be given if you get the correct answer, regardless of method.
Partial Credit may given only if you follow the methods from class.

13. A uniform stick of mass $m = 2$ kg and length $L = 3$ m is pivoted at one end. It is held horizontally and then released. The pivot is frictionless. Find the angular acceleration of the stick immediately after it is released.

Your answer:

$$\alpha = 4.90 \text{ rad/s}^2$$

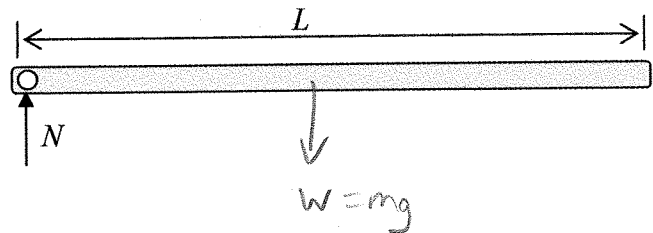


$$\Sigma \tau = I \alpha$$

$$I = \frac{1}{3} mL^2$$

$$\Sigma \tau = mg \cdot L = \left(\frac{1}{3} mL^2\right) \alpha$$

$$\alpha = \frac{3g}{2L}$$



$$\alpha = 4.9 \text{ rad/s}^2$$

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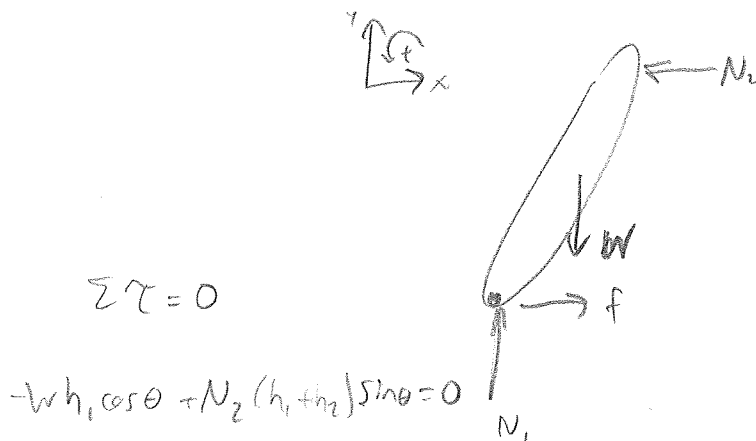
Solution

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(10 points; 5 minutes)

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5. A woman who weighs 550 N is leaning against a frictionless wall. The floor has friction. Given $h_1 = 1.29$ m, $h_2 = 0.42$ m, and $\theta = 65^\circ$, determine the normal force exerted on the woman by the wall.



$$N_2 = \frac{wh_1}{(h_1 + h_2) \tan \theta}$$

Your answer:

$$N = 193.5 \text{ N}$$

