Rotational Energy and Momentum 1 (8836401)

Current Score: 0/6 **Due:** Fri Mar 25 2016 04:00 PM PDT

Question	1	2	3	4	Total
Points	0/1	0/1	0/1	0/3	0/6

Instructions

Note, the moment of inertia of a ring with some thickness is: 1/2 * m * (Inner radius^2 + Outer radius^2)

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1. 0/1 points OSColPhys1 10.4.022. [2153308]

What is the final velocity of a hoop that rolls without slipping down a 4.00 m high hill, starting from rest?

[ ] ✗ 6.26 m/s

Additional Materials

Reading

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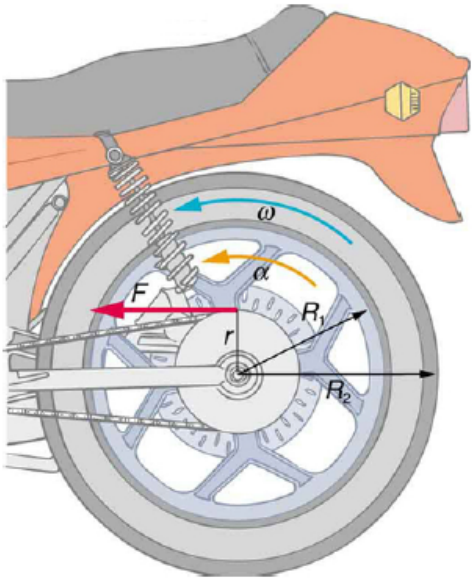
2. 0/1 points OSColPhys1 10.4.024. [3346537]

Calculate the rotational kinetic energy in the motorcycle wheel (figure) if its angular velocity is 140 rad/s. Assume M = 16.0 kg, R_1 = 0.240 m, and R_2 = 0.340 m.

[ ] ✗ 13600 J



Additional Materials

Reading

3. 0/1 points OSColPhys1 10.5.038. [3346544]

Suppose you start an antique car by exerting a force of 470 N on its crank for 0.270 s. What angular momentum is given to the engine if the handle of the crank is 0.320 m from the pivot and the force is exerted to create maximum torque the entire time?

[ ] ✗ 40.6 kg · m^2/s

Additional Materials

Reading

4. 0/3 points OSColPhys1 10.5.041. [2153820]

(a) Calculate the angular momentum of an ice skater spinning at 6.00 rev/s given his moment of inertia is 0.350 kg·m^2.

[ ] ✗ 13.2 kg · m^2/s

(b) He reduces his rate of spin (his angular velocity) by extending his arms and increasing his moment of inertia. Find the value of his moment of inertia if his angular velocity drops to 2.05 rev/s.

[ ] ✗ 1.02 kg·m^2

(c) Suppose instead he keeps his arms in and allows friction with the ice to slow him to 3.00 rev/s. What average torque was exerted if this takes 20.0 seconds?

[ ] ✗ -0.33 N·m

Additional Materials

Reading

Assignment Details

Name (AID): **Rotational Energy and Momentum 1 (8836401)**
Submissions Allowed: **10**
Category: **Homework**
Code:
Locked: **No**
Author: **Steinkamp, Alex (** asteinkamp@osd.wednet.edu **)**
Last Saved: **Mar 22, 2016 03:37 PM PDT**
Group: **AP Phys 1**
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