SI SESSION 16

SIGN IN

Expectations:

This is not a tutoring session
Be respectful
Listen and learn from your peers
Have a good time 🙂

Covering:

Rotational Motion

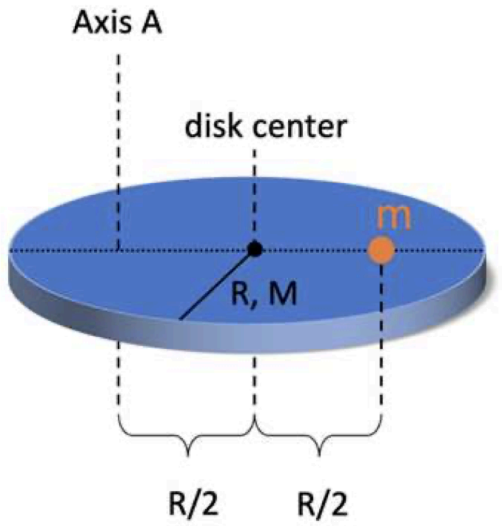
WU

Write down the important formulas that are needed for this chapter (we will be compiling our own formula sheet for this unit so you can add and refer to it)

The platter of the hard drive of a computer rotates at 7200 rpm (rpm = revolutions per minute = rev/min). (a) What is the angular velocity (rad/s) of the platter? (b) If the reading head of the drive is located 3.00 cm from the rotation axis, what is the linear speed of the point on the platter just below it? (c) If a single bit requires 0.50 μm of length along the direction of motion, how many bits per second can the writing head write when it is 3.00 cm from the axis?

The Moon's nearly circular orbit about the Earth has a radius of about 384,000 km and a period T of 27.3 days. Determine the acceleration of the Moon toward the Earth.

3. A point-like mass m = M/2 a distance R/2 from the center axis of a cylinder which has mass M and radius R. What is the moment of inertia of the system with respect to the axis “A” shown in the figure?



4. A piece of thin uniform wire of mass 3m and length 3b is bent into an equilateral triangle. Find the moment of inertia of the triangle wire about an axis perpendicular to the plane of the triangle and passing through one of its vertices.

5.

A dumbbell-shaped object is composed of two equal masses, m, connected by a rod of negligible mass and length r. Let I_1 be the moment of inertia of this object with respect to an axis passing through the center of the rod and perpendicular to it. Let I_2 be the moment of inertia with respect to an axis passing through one of the masses and parallel to the axis defining I_1. Wich of the following is true?

(A) $I_1 = I_2$

(B) $I_1 > I_2$

(C) $I_1 < I_2$

6.

Four objects listed below have the same mass M and same radius R. They simultaneously start to roll without slipping from the top of an incline. Which of them will arrive at the bottom of the incline *last*? The different moments of inertia are given as the answers below.

(A) Solid cylinder

(B) Hollow cylinder

(C) Solid sphere

(D) Hollow sphere

CD

ADD 3 more formulas that you used today to your formula sheet

Sign in if you were late: