**Noteguide for Angular Dynamics (Videos 8H) Name**



Example: A string with a tension of 2.1 N is wrapped around a 5.2 kg uniform cylinder with a radius of 12 cm. What is the angular acceleration of the cylinder? How many rotations will it make before it reaches a speed of 2300 RPM from rest?

(Whiteboards on the back)

Whiteboards:

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| 1. What torque is needed to accelerate a 23.8 kg m2 wheel at a rate of 388 rad/s/s?(9230 mN) | 2. An object has an angular acceleration of 23.1 rad/s/s when you apply 6.34 mN of torque. What is the object’s moment of inertia?(0.274 kgm2) |
| 3. If a drill exerts 2.5 mN of torque on a 0.075 m radius, 1.75 kg grinding disk, what is the resulting angular acceleration? (510 rad/s/s) | 4. What torque would accelerate an object with a moment of inertia of 9.3 kg m2 from 2.3 rad/s to 7.8 rad/s in 0.12 seconds? (1 hint)(430 mN) |
| 5. If you exert 12.0 N tangentially at the edge of a 45.0 kg 72.0 cm diameter cylindrical potter’s wheel, what is its angular acceleration?(1.48 rad/s/s) | 6. A merry go round is a uniform solid cylinder of radius 2.0 m. You exert 30. N of force on it tangentially for 5.0 s and it speeds up from rest to 12.9 RPMs. What’s its mass? (110 kg) |