Review for Test #2

❑ Responsible for:

- Chapters 5-8 (except sections 6.5), sections 4.3, 4.6, 9.1, 9.2 (no integrals), 13.3, and 13.4   (also chapters 1-4)
- Notes from class
- Problems worked in class
- Homework assignments

❑ Test format:

- 4 probs (15 points each), 1 prob (30 points), bonus (5 pts)
- 3 or 4 multiple-choice or T/F (10 points)
- Time: 75 minutes

❑ Test materials:

- Pencil, eraser, and non-programmable calculator
- No formula sheet or paper, Closed textbook/notes
- Student ID

Material Covered

❑ Chapters 5-8: Forces and Newton's Laws of Motion
- normal, friction, weight, mass, tension, ropes, pulleys
- Newton's 1st, 2nd, and 3rd Laws
- Free-body diagrams, inertial frames
- Application of $\sum \vec{F} = m\vec{a}$
- Uniform circular motion
- centripetal acceleration, banked curves

❑ Sections 13-3 and 13-4: Universal gravitational force, orbital speed, orbital period

❑ Section 4.3: Relative velocity, Galilean Transformation, rotational kinematics, tangential acceleration

❑ Chapter 9: Kinetic energy, work
- work-energy theorem

Example Problem (9.10)

The cable of crane is lifting a 750 kg girder. The girder increases its speed from 0.25 m/s to 0.75 m/s in a distance of 3.5 m.

(a) How much work is done by gravity?
(b) How much work is done by tension?

Example Problem (6.2)

The three ropes in Fig. EX6.2 in the book are tied to a small, very light ring. Two of the ropes are anchored to walls at right angles, and a third rope pulls as shown. What are the tensions in the first two ropes?

Example Problem (8.28)

A new car is tested on a 200-m-diameter track. If the car speeds up at a steady 1.5 m/s^2, how long after starting is the magnitude of its centripetal acceleration equal to the tangential acceleration?