Pre-Lab Practice: Ballistic Pendulum

Review the Textbook:

- PHYS 1401: Serway & Vuille: Example 5.10 & 6.5
- PHYS 2425: Serway & Jewett: Example 9.6

A 3 kg ball rises up 4.0m above the ground when it is thrown. Use the ground as the reference point (y=0) for measuring gravitational potential energy

1. What is the potential energy of the ball at ground level? (0.0 J)

2. What is the potential energy of the ball at the highest point? (117.6 J)

3. What is the kinetic energy of the ball at the highest point? (0.0 J)

4. What is the kinetic energy of the ball at ground level? (117.6 J)

5. What is the speed of the ball at ground level just after the throw? (8.85 m/s)

6. On the way down the ball loses 40% of its mechanical energy due to air resistance though there was no loss of mechanical energy on the way up. What is the speed of the ball as it returns to the ground?

(6.85 m/s)

A bead moves along a frictionless circular track with a radius of 3.5 m as shown in Figure 5. The speed of the bead at the lowest point A of the track is 5.0 m/s.



Figure 5. A bead moving along a frictionless circular track.

7. What is the maximum height (at B) attained by the bead above the lowest point of the track? (1.28 m)

8. The center of the circular track is C. What is the angle ACB? (50.6°)