Physics 10: Midterm Exam
May 2, 2008
Version A

- Be sure to write your name at the top of each page
- Multiple Choice problems are worth 2.5 points each for a total of 50 points
- True/False problems are worth 2.5 points each for a total of 25 points
- Short Answer Problems total 25 points
- Show your reasoning, write formulas where appropriate
- Use 10 m/s² in lieu of 9.8 m/s² in all calculations
- If you miss one part of the short answer, but need the number for the next part, make up a number and proceed

Formula List:

- \( x = x_0 + v_0 t + \frac{1}{2}at^2 \)
- \( v = v_0 + at \)
- \( v_{avg} = \frac{1}{2}(v_{final} + v_{initial}) \)
- \( P.E. = mgh \)
- \( K.E. = \frac{1}{2}mv^2 \)
- \( W = F \cdot d \)
- \( p = mv \)
- \( a = \frac{v^2}{r} \)
- \( F_{drag} = 0.65Av^2 \)
- \( F_{friction} = \mu F_{normal} \)
- weight = mg, with \( g = 9.8 \) m/s² ≈ 10 m/s²
- and last but not least is \( F = ma \)

Complex Units:

- Newtons: \( N = \text{kg} \cdot \text{m/s}^2 \)
- Joules: \( J = \text{N} \cdot \text{m} = \text{kg} \cdot \text{m}^2/\text{s}^2 \)
- Watts: \( W = \text{J/s} = \text{kg} \cdot \text{m}^2/\text{s}^3 \)