

# Physics 25 Problem Set 9

Harry Nelson

**due Monday, June 2**

Please make your work neat, clear, and easy to follow. It is hard to grade sloppy work accurately. Generally, make a clear diagram, and label quantities. Derive symbolic answers, and then plug in numbers after a symbolic answer is available.

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1. Consider the uncertainty principle for *you*. Suppose you are localized to 1 centimeter. What is the approximate uncertainty in your momentum, from the uncertainty principle?
  2. Find the wavelength of a bowling ball of weight 16 pounds rolling at 20 miles per hour.
  3. Anderson 4-5. The classical radius of an electron is  $e^2/(m_0c^2)$ .
  4. Anderson 4-6. Go ahead and use 4.16 for the maxima.
  5. Anderson 4-7.
  6. Anderson 4-9.
  7. Anderson 4-10.
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