Physics 662
Problem Set 2

Due: Monday, May 7, 2012

Work the following problems:

1. Perkins 8.3
2. Perkins 8.4
3. Perkins 8.5
4. Perkins 8.6
5. Perkins 8.8
6. The Higgs mechanism predictions for the gauge boson masses are:
   \[ M_W = \frac{g v}{2} \quad M_Z = \frac{v}{2} \sqrt{g'^2 + g^2}. \]
   (a) From the measured values of \( M_W \) and \( \sin^2 \theta_W \), determine the value of \( v \).
   (b) Repeat (a) using \( M_Z \) in place for \( M_W \).
   (c) Comment on the comparison of the results for (a) and (b).