1. Derive the relations between the oblique parameters $S$, $T$, and $U$ and the chiral lagrangian parameters $\alpha_1$, $\beta_1$, and $\alpha_8$ given in class.

2. Derive the tree-level expression for $A^e_{LR}$ given in class.

3. In the SU(5)/SO(5) little Higgs model,
   a) derive the transformation laws for the Higgs doublets under $SU(3)_{1,2}$;
   b) show that either such unbroken symmetry prevents a Higgs mass; and
   c) show that the gaugings of $[SU(2) \times U(1)]$, break one or the other of these symmetries.

   Thus, the Higgs mass must be proportional to $g(1)g(2)$.

Extra credit

Working with an explicit momentum-space cutoff prescription, derive the standard model formula for the quadratically-divergent one-loop contributions to $\delta M_H^2$, given in class.