

Homework 2, Due Jan. 31, 2008

1. Argyres (1996) exercise 5.2.
2. Argyres (1996) exercise 5.4.
3. Argyres (1996) exercise 5.10.
4. Verify all the identities in equations (2.33) and (2.34) of Martin.
5. Draw the triangle diagrams for the baryon number current anomaly, $\partial_\mu j_B^\mu$, into $SU(3)_C$ and $SU(2)_W$ and $U(1)_Y$ gauge fields in the Standard Model. Counting the different contributions explicitly, verify that baryon number B is a symmetry of $SU(3)_C$, but is anomalous under $SU(2)_W$ and $U(1)_Y$. Verify that $B - L$ is an anomaly free symmetry of the Standard Model.
6. Extra credit: Luty exercise 1 (page 5).