PHY 5667 : Quantum Field Theory A, Fall 2004

September 30^{th}, 2004
Assignment # 3
(due Thursday October 14^{th}, 2004)

1. Problem 3.6 of Peskin and Schroeder's book.

2. Derive explicitely Eqs. (3.104), and (3.113) of Peskin and Schroeder's book.

3. Read Section 3.6 of Peskin and Schroeder's book and derive the results summarized in the first four column of the table on p. 71 (i.e. the value of P, T, and C for the following Dirac field bilinears: $\bar{\psi}\psi$, $i\bar{\psi}\gamma^5\psi$, $\bar{\psi}\gamma^\mu\psi$, and $\bar{\psi}\gamma^\mu\gamma^5\psi$).

4. Show that the QED Lagrangian in Eq. (4.4) of Peskin and Schroeder's book is invariant under the gauge transformation given in Eq. (4.6).