

PHY 5667 : Quantum Field Theory A, Fall 2006

October 5th, 2006

Assignment # 3

(due Thursday October 19th, 2006)

1. Read Section 3.6 of Peskin and Schroeder's book and derive the results summarized in the table on page 71.
2. 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).
3. Using the same technique applied to prove Eq. (4.37) of Peskin and Schroeder's book, show explicitly how to obtain Eq.(4.39). Also, show that $\langle 0|T\{\phi(x_1)\phi(x_2)\phi(x_3)\}|0\rangle = 0$.