PHYS 485: Problem Set 3

Due: 4:30 pm, 2 February 2010

If the answer is shown, all the marks will be given for the derivation not for writing down the answer.

1. [2] Griffiths Problem 4.19.
2. [4] Griffiths Problem 4.21.
3. [6] Griffiths Problem 4.23.
4. [3] Griffiths Problem 4.37.
5. [4] Griffiths Problem 4.38.
6. [7] In general, a meson with spin J can have $C = (-1)^J$ or $C = (-1)^{J+1}$, and $P = (-1)^J$ or $P = (-1)^{J+1}$, giving four possible combinations of C and P in all. Which of these combinations can occur in the simple quark model? List the forbidden J^{PC} values explicitly for $J = 0, 1, 2$, and 3.