

## Physics 712 Homework #20

1. Evaluate the total cross-section in the method of partial waves for the case of inelastic scattering, i.e., when  $S_l(k) = \eta_l e^{2i\delta_l}$  where  $\eta_l$  is real and  $0 \leq \eta_l \leq 1$ , by
  - a) integrating the differential cross-section, and
  - b) using the optical theorem.

**Hint:** The two expressions will not give the same result. Explain why the difference is due to absorption.

2. Sakurai problem 7.8.

**Hint:** Note that part (a) is essentially solved in Jackson, so you may provide just an outline of Jackson's solution for this part.