

Physics 487 Homework 10: Due 9:00pm, May 1, 2015

- Problem 1:

From the expressions we have derived for the scattering amplitude in 1-dimension , show that R and T can be written as

$$\begin{aligned}R &= i \sin(\delta_0 - \delta_1) \exp(i(\delta_0 + \delta_1)) \\T &= \cos(\delta_0 - \delta_1) \exp(i(\delta_0 + \delta_1))\end{aligned}\tag{1}$$

(2)

- Problem 2: Redo the analysis we did in class for the 1 and 2-delta function problems for the square well. That is, determine the conditions for the existence of bound states and resonances. Determine if both the attractive and repulsive square well potentials give rise to bound states.
- Problem 3: Griffiths, 11.11,11.12