# F20 PHYSICS 137B: HW 9

Due November 6 at 11:59 pm

October 27, 2020

## 1 Griffiths problems

Do the following problems from Griffiths: 10.12, 10.13ab

## 2 Other problems

### 2.1

Using the Born approximation, evaluate the differential scattering cross-section for scattering of particles of mass $m$ and incident energy $E$ by the repulsive spherical well with potential:

$$V(r) = \begin{cases} V_0, & 0 < r < a \\ 0, & r > a \end{cases} \tag{2.1}$$

Exhibit explicit $E$ and $\theta$ dependence.

### 2.2

Using the Born approximation, obtain an integral expression for the total cross-section for scattering of particles of mass $M$ from the attractive Gaussian potential

$$V(r) = -V_0 \exp\left[-\left(\frac{r}{a}\right)^2\right] \tag{2.2}$$