1) Problem 4.2 in text on p. 127.

2) Problem 4.4.

3) One pion exchange pot. Consider two nucleons exchanging an uncharged pseudoscalar pion with interaction Lagrangian

\[ L = -i g \overline{\Psi} \gamma_5 \Psi \phi \]

Calculate the effective pot. For NN scattering to lowest order in g. Write your answer in momentum space.

First show

\[ \overline{U}(p') \gamma_5 U(p) = a \overline{U}(p') \gamma_5 (p' - \rho) U(p) \]

and calculate the constant \( a \). Then take the non relativistic limit of \( \overline{U} \gamma_5 \phi U \).