Recitation #12
Quantum 522

1. Find the asymptotic probability current for the scattered wave.

2. In deriving the Rutherford scattering formula, we used a cut-off in the potential $V(r) = \frac{2Ze^2}{r}e^{-r/a}$ Then the cross section had a factor

$$\left(1/a^2 + q^2\right)^{-2}$$

so the condition to neglect a is $aq \ll 1$

For an alpha particle $m_\alpha \approx 4m_p$ and kinetic energy of 5 MeV, for what angles should the approximation be valid?