3. Consider the scattering of a spinless particle of charge e and mass m in the screened Coulomb potential (also known as the Yukawa potential),

$$V(r) = -\frac{Ze^2}{r}e^{-r/a}.$$

Compute the differential scattering cross section, $d\sigma/d\Omega$, for fast incident particles in the appropriate approximation. What is the range of validity for your approximation?