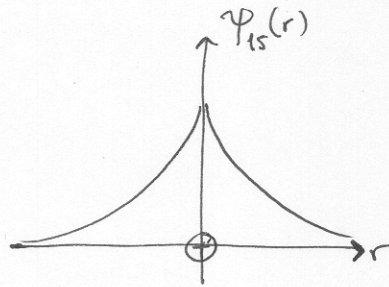


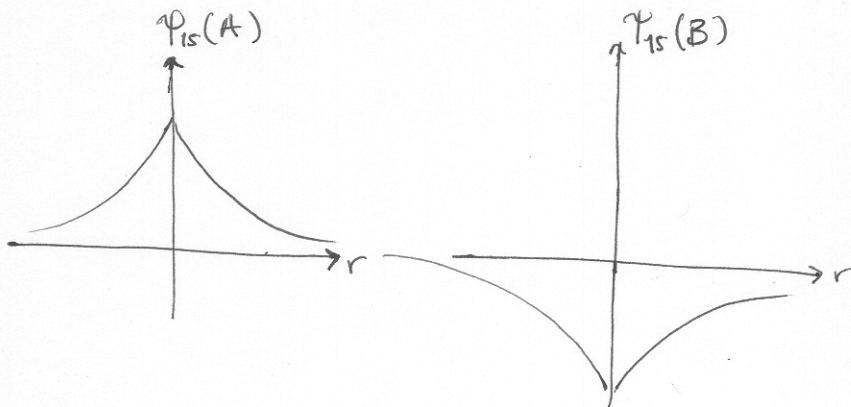
4.1 a) From table 3.2,  $\psi_{1s}(r) \sim e^{-r/a_0}$



b)  $\psi_{1s}(r,t) = \psi_{1s}(r) \cdot e^{-iEt/\hbar} \sim e^{-r/a_0} e^{-i\omega t}$ , where  $\omega = E/\hbar$  is an angular frequency

c) Two wavefunctions are out of phase if they have the same frequency and there is a time delay between their oscillations such that when one is at a minimum the other is at a maximum.

d) At the same instant,



4.2 Combination



compare the wavefunctions to the potential well wavefunctions:

