Since the problem says "at a point" and not "on a spherical shell", we should use $R_{n\ell}(r)^2$ and not multiply by $4\pi r^2$.

For the ground state, $R_{1s}(\rho) = 2a^{-3/2} e^{-\rho/2}$, $R_{1s}(\rho)^2 = 4a^{-3} e^{-\rho}$.

Maximum at $\rho = 0$. Drops to 50% at $e^{-\rho} = \frac{1}{2}$, i.e $\rho = \ln 2$

$\rho = \frac{2}{na} r$. For $n=1$, $\rho = \frac{2}{a} r \simeq \frac{2}{a_0} r$ So $r \simeq \frac{1}{2} a_0 \ln 2$