Chapter 9 Test

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1. Use

$$\psi(\vec{r},t) = \psi(\vec{r}) \exp(-\left(\frac{iEt}{\hbar}\right))$$

to arrive at the time independent Schrodinger equation from the time dependent Schrodinger equation in three-dimensions in the Cartesian coordinates.
hint $\hat{H}\psi = \frac{-\hbar^2}{2m}\nabla^2\psi + V\psi$

2. Express the Shcrodinger equation in Spherical coordinates for three dimensions.

3. Walk through the process of reduction and partial solutions for the previous answer.