Quiz #3

Friday, September 15

PHYSICS 851, FALL 2000

1. (a) What is the representation of the position operator in the momentum basis – how is $\langle \mathbf{p}|\mathbf{r}_{op}|\Psi\rangle$ related to $\langle \mathbf{p}|\Psi\rangle$?

   (b) Suppose that the potential is $v(\mathbf{r}) = (k/2)r^2$. What is the Schrödinger equation written in momentum space; that is, what is the equation of motion of the amplitude $\langle \mathbf{p}|\Psi(t)\rangle$?