Assignment #8: KS and Measurement.

1. (3pt.) Suppose A is an operator that represents a property and that has eigenvectors $|a_1\rangle, |a_2\rangle, \dots, |a_N\rangle$.

   (a) What property does the projection operator $P_{|a_{25}\rangle}$ represent?

   (b) What values does this property have?

   (c) What can we say about a physical system that possesses these values of the property represented by $P_{|a_{25}\rangle}$?

2. (3pt.) The *Kochen-Specker Theorem* says, if we assume the values of properties obey some simple functional constraints, then the properties of a quantum system with 3 or more degrees of freedom cannot all have values at the same time. Why is this an obstacle for *Hidden Variables* interpretations of quantum mechanics? Why is this *not* an obstacle for a *literal* interpretation of superpositions?

3. (4pt.) What is the Measurement Problem? Why is it a problem for a literal interpretation of quantum mechanics? In what sense does a non-literal interpretation avoid it?