

Reflective Homework

1) The Time Dependent Schroedinger Equation (TDSE) is

$$i\hbar \frac{\partial \Psi(x, t)}{\partial t} = \hat{H} \Psi(x, t) \quad (1)$$

A person says that TDSE implies

$$i\hbar \frac{\partial}{\partial t} = \hat{H} \quad (2)$$

Explain why you agree or disagree with the person. You must justify your answer to get any credit.

2) The time independent Schroedinger Equation (TISE) is

$$\hat{H} \psi(x) = E \psi(x) \quad (3)$$

A person says that if you obtain two solutions of the TISE ($\psi_1(x)$ with E_1 and $\psi_2(x)$ with E_2) then any linear superposition of $\psi_1(x)$ and $\psi_2(x)$ is also a solution of TISE. Explain why you agree or disagree with this statement. You must justify your answer to get any credit.

3) The position-momentum uncertainty relation is an inequality. Can you find an instance when that inequality becomes an equality?

4) We have only one system (not an ensemble). Can we perform repeated measurement on this system to map out the probability density for position measurement?