Q4.3

The expectation value is a *weighted average*: for a particular wavefunction (a superposition of eigenfunctions), the expectation value is the sum of the eigenvalues of the components, multiplied by (weighted by) the probability of collapsing the wavefunction to that particular component eigenfunction. This is quite different from a straight average of all the eigenvalues.

Q5.13

Same reason (more or less) as the answer to Q5.14: it is necessary for wavefunctions to be twice differentiable for the Schrödinger equation to be useful (the Hamiltonian demands that we take a second derivative). Thus, the derivative of the wavefunction must be continuous.