If a system is described by a wavefunction $\Psi$, which is not an eigenfunction of an operator $\hat{A}$, then a distribution of measured values will be obtained, and the average value of the observable property is given by the expectation value integral:

$$\langle A \rangle = \frac{\int \Psi^* \hat{A} \Psi \, d\tau}{\int \Psi^* \Psi \, d\tau} \tag{7.1}$$

where the integration is over all coordinates involved in the problem. The average value $\langle A \rangle$, also called the expectation value, is the average of many measurements. If the wavefunction is normalized, then the normalization integral in the denominator of Eq. 4.1 equals 1, which then converts to

$$\langle A \rangle = \int \Psi^* \hat{A} \Psi \, d\tau \tag{7.2}$$