If an operator  $\hat{A}$  has a complete, discrete eigenbasis of states  $f_n$  then (1)

write the decomposition of a wavefunction  $\Psi$  in the eigenstates  $f_n(x)$ , (2) write the coefficients of this decomposition, and (3) write the expectation

value of the observable A in terms of these coefficients.