

Complete the following table.

Discrete Basis $\{|a_i\rangle\}$

Coordinate Basis $\{|x\rangle\}$

Momentum Basis $\{|p\rangle\}$

(1) $A|a_i\rangle = a_i|a_i\rangle$

(2) $\langle a_i|a_j\rangle = \delta_{ij}$

(3) $c_i = \langle a_i|\Psi\rangle$

(4) $|\Psi\rangle = \sum_i c_i|a_i\rangle$

(5) $|\Psi\rangle \leftrightarrow \begin{bmatrix} c_1 \\ c_2 \\ \vdots \\ c_n \end{bmatrix}$

(6) $\langle\Psi| \leftrightarrow \begin{bmatrix} c_1^* & c_2^* & \cdots & c_n^* \end{bmatrix}$

(7) $\mathcal{P}(a_i) = |\langle a_i|\Psi\rangle|^2$

(8) $I = \sum_i |a_i\rangle\langle a_i|$

(9) $D_{ij} = \langle a_i|D|a_j\rangle$