Pauli Z basis $\{|0\rangle, |1\rangle\}$

$$|0\rangle = \begin{pmatrix} 1 \\ 0 \end{pmatrix} \quad |1\rangle = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

$$|\psi\rangle = \alpha|0\rangle + \beta|1\rangle$$

Pauli Y basis $\{|i\rangle, |-i\rangle\}$

$$|i\rangle = \frac{1}{\sqrt{2}} \begin{pmatrix} 1 \\ i \end{pmatrix} \quad |-i\rangle = \frac{1}{\sqrt{2}} \begin{pmatrix} 1 \\ -i \end{pmatrix}$$

$$|\psi\rangle = \frac{\alpha - i\beta}{\sqrt{2}}|i\rangle + \frac{\alpha + i\beta}{\sqrt{2}}|-i\rangle$$