d)

$$|+\rangle = \frac{1}{\sqrt{2}}|0\rangle + \frac{1}{\sqrt{2}}|1\rangle$$

$$\langle +| = \frac{1}{\sqrt{2}}\langle 0| + \frac{1}{\sqrt{2}}\langle 1|$$

$$\langle +|\psi\rangle =$$

$$\frac{1}{\sqrt{2}}\left(\langle 0| + |1\rangle\right) \cdot \left[\frac{1}{2} + \frac{i}{2}|0\rangle + \frac{1}{2} - \frac{i}{2}|1\rangle\right]$$

$$\frac{1}{\sqrt{2}}\left[\frac{1}{2} + \frac{i}{2}\langle 0|0\rangle + 0 + 0 + \left(\frac{1}{2} - \frac{i}{2}\langle 1|1\rangle\right)\right]$$

$$\frac{1}{\sqrt{2}}\left(\frac{1}{2} + \frac{i}{2} + \frac{1}{2} - \frac{i}{2}\right) = \frac{1}{\sqrt{2}} \cdot 1$$

$$\langle +|\psi\rangle = \frac{1}{\sqrt{2}} //$$

$$|-\rangle = \frac{1}{\sqrt{2}} \left(|0\rangle - |1\rangle \right)$$

$$\frac{1}{\sqrt{2}} \left(\langle 0| - \langle 1| \right)$$

$$\frac{1}{\sqrt{2}} \cdot \left(\langle 0| - \langle 1| \right) \left(\left(\frac{1}{2} + \frac{i}{2} \right) |0\rangle + \left(\frac{1}{2} - \frac{i}{2} \right) |1\rangle \right)$$

$$\frac{1}{\sqrt{2}} \cdot \left(\frac{1}{2} + \frac{i}{2} + 0 - 0 + \left(\frac{1}{2} - \frac{i}{2} \right) \right)$$

$$\frac{1}{\sqrt{2}} \left(\frac{1}{2} + \frac{i}{2} + \frac{1}{2} + \frac{i}{2} \right)$$

$$\frac{1}{\sqrt{2}} \left(\frac{i+i}{2} \right) = \frac{1}{\sqrt{2}} \cdot \frac{2i}{2} = \frac{1}{\sqrt{2}} i$$

$$\langle - | \psi \rangle = \frac{1}{\sqrt{2}} \cdot i$$

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