解答

作成者：吾妻広夫

1.

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

2.

$$\langle 0|0\rangle = 1, \quad \langle 0|1\rangle = 0, \quad \langle 1|0\rangle = 0, \quad \langle 1|1\rangle = 1, \tag{2}$$

$$\langle +|+\rangle = 1, \quad \langle +|-\rangle = 0, \quad \langle -|+\rangle = 0, \ \langle -|-\rangle = 1, \tag{3}$$

$$\langle 0|+\rangle = \frac{1}{\sqrt{2}}, \quad \langle 0|-\rangle = \frac{1}{\sqrt{2}}, \quad \langle 1|+\rangle = \frac{1}{\sqrt{2}}, \quad \langle 1|-\rangle = -\frac{1}{\sqrt{2}}, \tag{4}$$

$$\langle +|0\rangle = \frac{1}{\sqrt{2}}, \quad \langle +|1\rangle = \frac{1}{\sqrt{2}}, \quad \langle -|0\rangle = \frac{1}{\sqrt{2}}, \quad \langle -|1\rangle = -\frac{1}{\sqrt{2}} \tag{5}$$