

章末問題解答

9章 章末問題

1.

$$u(n_1, n_2) = \sum_{k_1=0}^{\infty} \sum_{k_2=0}^{\infty} \delta(n_1 - k_1, n_2 - k_2)$$

2.

$$\begin{aligned} y(n_1, n_2) &= \delta(n_1, n_2) + 4\delta(n_1 - 1, n_2) + 4\delta(n_1 - 2, n_2) \\ &+ 7\delta(n_1, n_2 - 1) + 21\delta(n_1 - 1, n_2 - 1) + 14\delta(n_1 - 2, n_2 - 1) \\ &+ 12\delta(n_1, n_2 - 2) + 25\delta(n_1 - 1, n_2 - 2) + 12\delta(n_1 - 2, n_2 - 1) \end{aligned}$$

3.

$$[0, 0, 4, 0]^T$$

4.

$$[0, 0.77, 0, 1.85]^T$$

5.

$$\begin{pmatrix} 0 & 0 & 0 & 0 \\ 2 & 2i & -2 & -2i \\ 0 & 0 & 0 & 0 \\ 2 & -2i & -2 & 2i \end{pmatrix}$$

6.

$$\begin{aligned} U_0(z) &= \frac{1}{\sqrt{2}} (1 + 3z^{-1}) \\ U_1(z) &= \frac{1}{\sqrt{2}} (1 - z^{-1}) \end{aligned}$$