

2E2 Tutorial Sheet 7 First Term¹

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1. (2) Use the Z-tranform to solve the difference equation

$$x_{k+2} - 8x_{k+1} + 15x_k = 1 \quad (1)$$

with $x_1 = 0$ and $x_0 = 0$.

2. (2) Use the Z-tranform to solve the difference equation

$$x_{k+2} - 8x_{k+1} + 15x_k = 3^k \quad (2)$$

with $x_1 = 0$ and $x_0 = 0$.

3. (2) Use the Z-tranform to solve the difference equation

$$x_{k+2} - 8x_{k+1} + 15x_k = \delta_k \quad (3)$$

with $x_1 = 0$ and $x_0 = 0$. Remember δ_k is the unit pulse with $\delta_k = (1, 0, 0, 0, \dots)$.

4. (2) Use the Z-tranform to solve the difference equation

$$x_{k+2} - 8x_{k+1} + 15x_k = 0 \quad (4)$$

with $x_1 = 2$ and $x_0 = 3$.

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