2E2 Tutorial Sheet 7 First Term[1]

21 November 2003

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

$$x_{k+2} - 8x_{k+1} + 15x_k = 1 \tag{1}$$

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

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

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

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

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

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

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

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

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

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

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