Example 7-2: Inverse z-transform

Consider the z-transform $X(z)$ given by the equation

$$X(z) = 1 - 2z^{-1} + 3z^{-3} - z^{-5}$$

We can give $x[n]$ in tabular form as in Example 7-1, or we can give an equation for the sequence values as a function of n in the form

$$x[n] = \begin{cases} 0 & n < 0 \\ 1 & n = 0 \\ -2 & n = 1 \\ 0 & n = 2 \\ 3 & n = 3 \\ 0 & n = 4 \\ -1 & n = 5 \\ 0 & n > 5 \end{cases}$$

Alternatively, using the representation (7.1) in terms of impulse sequences, the corresponding sequence $x[n]$ is

$$x[n] = \delta[n] - 2\delta[n-1] + 3\delta[n-3] - \delta[n-5]$$

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