Assignment

11.9.1 - 9

EE23BTECH11220 - R.V.S.S Varun

Question

Find a_9 in the sequence $a_n = (-1)^{n-1} n^3$

Solution

Given,

$$x(n) = (-1)^{n-1} \cdot n^3 \cdot u(n) \tag{1}$$

Subsitute n=9,

$$x(9) = 729 \tag{2}$$

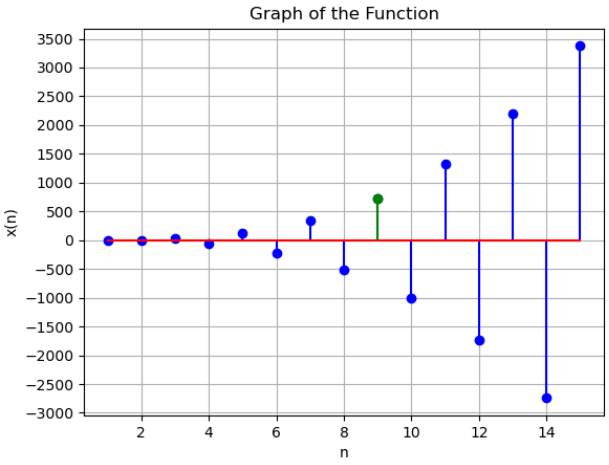
$$X(z) = \sum_{n=-\infty}^{n=\infty} x(n) \cdot z^{-n} \tag{3}$$

$$X(z) = \frac{6z^2}{(z^2-1)^2} \tag{4}$$

$$\text{ROC} \implies \{z : |z| < 1\} \tag{5}$$

Symbol	Description
x(0)	first term of the sequence
x(n)	nth term of the sequence
$x(n) \overset{\mathcal{Z}}{\longrightarrow} X(z)$	$\mathcal{Z}$- transform of x(n)

TABLE 0
Table of parameters



Graph of x(n)