

NCERT Discrete 11.9.1 Q7

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Question: Find the indicated terms in the sequence whose n th terms is $a(n) = 4n - 3$. Find $a(17)$ and $a(24)$.

Solution: In the question, following information is provided:

Symbol	Value	Description
$x(n)$	$(4n + 1)u(n)$	The n th term of the sequence
$x(17)$?	17th term
$x(24)$?	24th term

TABLE I
PARAMETERS

As series starts from $n=0, a(n+1) = x(n)$

$$x(n) = (4n + 1)u(n). \quad (1)$$

$$a(17) = x(16) \quad (2)$$

$$x(16) = 4 \times 16 + 1 = 65 \quad (3)$$

$$a(24) = x(23) \quad (4)$$

$$x(24) = 4 \times 23 + 1 = 93 \quad (5)$$

$$X(z) = \sum_{n=-\infty}^{\infty} x[n] \cdot z^{-n} \quad (6)$$

From (??) we get,

$$X(z) = 4 \frac{z^{-1}}{(1 - z^{-1})^2} + \frac{1}{1 - z^{-1}} \quad |z| > 1 \quad (7)$$

The plot between $x(n)$ and n is :

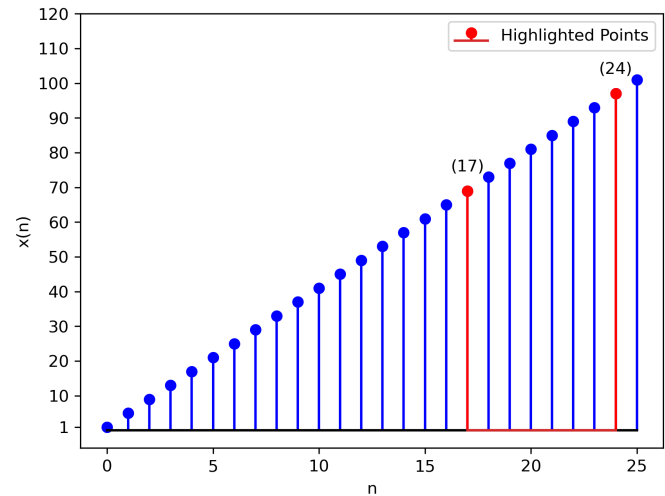


Fig. 1. $x(n)$ vs n