

NCERT Discrete - 10.5.2.2

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Question 10.5.2.2:

- 1) 30th term of the AP: 10, 7, 4, ... is
- 2) 11th term of the AP: $-3, -\frac{1}{2}, 2, \dots$ is

Solution:

Parameter	value	Description
$x_i(0)$	10	First term
	-3	
d_i	-3	Common difference
	$\frac{5}{2}$	
$x_1(29)$?	30th term
$x_2(10)$?	11th term

TABLE 2
INPUT PARAMETERS

$$x_i(n) = [x_i(0) + n \times d_i] u(n) \quad (1)$$

- 1) From (1) Table 2 :

$$x_1(n) = [10 - 3n] u(n) \quad (2)$$

$$x_1(29) = -77 \quad (3)$$

$$X_1(z) = \frac{10 - 13z^{-1}}{(1 - z^{-1})^2} \quad |z| > 1 \quad (4)$$

- 2) From (1) and Table 2 :

$$x_2(n) = \left[-3 + \frac{5}{2}n \right] u(n) \quad (5)$$

$$x_2(10) = 22 \quad (6)$$

$$X_2(z) = \frac{0.5z^{-1} - 3}{(1 - z^{-1})^2} \quad |z| > 1 \quad (7)$$

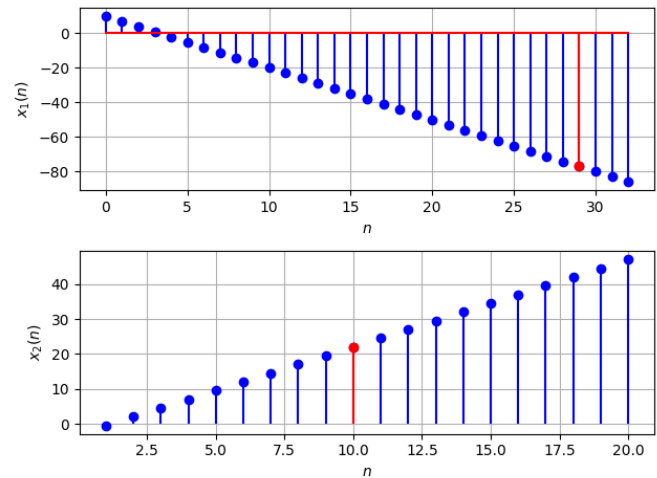


Fig. 2. stem plots of $x_1(n)$ and $x_2(n)$