# 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: $-3, -\frac{1}{2}, 2, \ldots$ is

**Solution:**

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

TABLE 2
INPUT PARAMETERS

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

1) From (1) Table 2 :

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

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

$$X_1(z) = \frac{10 - 13z^{-1}}{(1 - z^{-1})^2} \, [ROC : |z| > 1] \qquad (4)$$

2) From (1) and Table 2 :

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

$$x_2(10) = 22 \qquad (6)$$
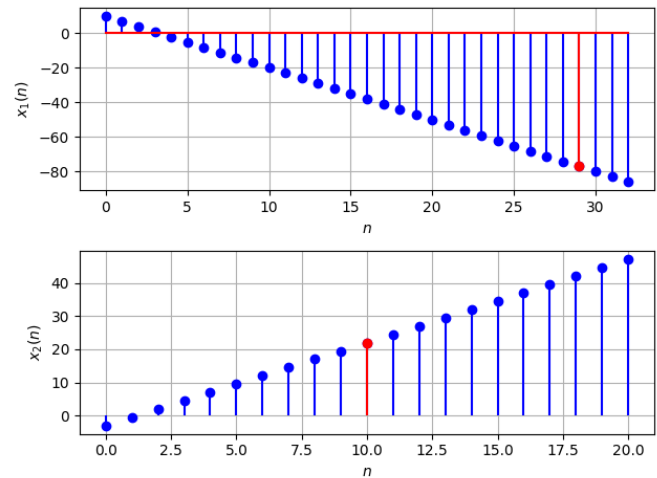
$$X_2(z) = \frac{0.5z^{-1} - 3}{(1 - z^{-1})^2} \, [ROC : |z| > 1] \qquad (7)$$



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