Discrete Assignment

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Question (10.5.2.4)
Which term of the arithmetic progression (AP): $3, 8, 13, 18, \ldots$ is 78?
Solution

Parameters	Value	Description
$x(0)$	3	Initial Term
d	5	Common Difference
$x(k)$	78	Target Term
k	?	Target Term Number
$x(n)$	$x(0) + (n)d$	General term

TABLE 0
PARAMETERS FOR THE ARITHMETIC PROGRESSION

$$x(n) = (3 + (n)5)\, u(n) \tag{1}$$

$$78 = 3 + (k)5 \tag{2}$$

$$k = 15 \tag{3}$$

So, the term of the arithmetic progression that is equal to 78 is the 16th term.

$$X(z) = \frac{3 + 2z^{-1}}{(1 - z^{-1})^2} \quad |z| > 1 \tag{4}$$

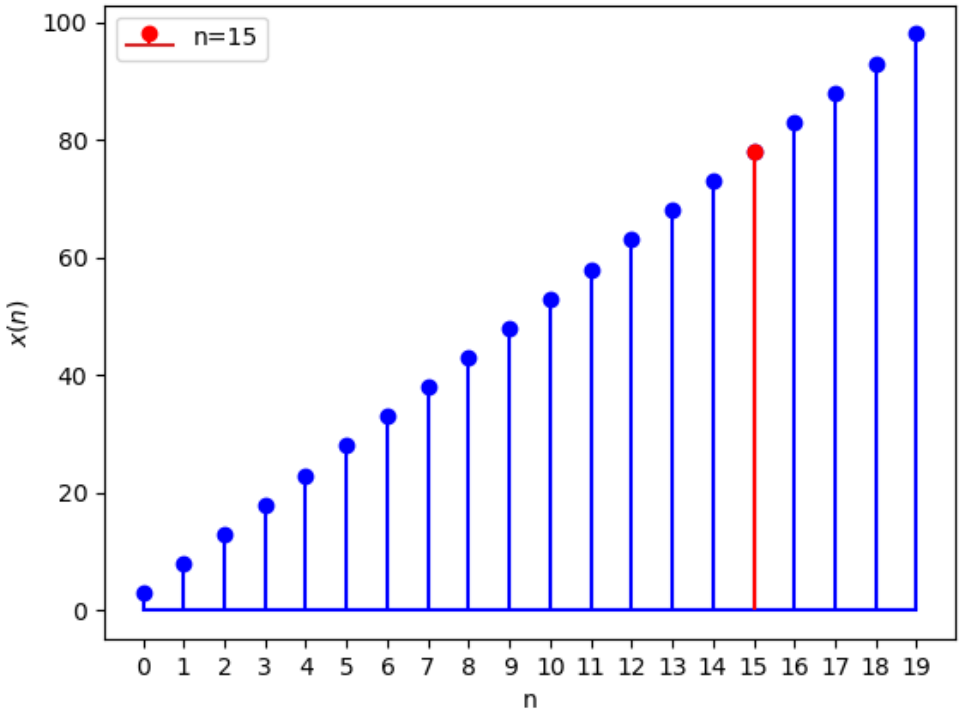

Fig. 0. Arithmetic Progression Plot