Question

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

TABLE 0
PARAMETERS FOR THE ARITHMETIC PROGRESSION

$$x(n) = (x(0) + (n)d)\, u(n) \tag{1}$$

$$x(n) = (3 + (n)5)\, u(n) \tag{2}$$

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

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

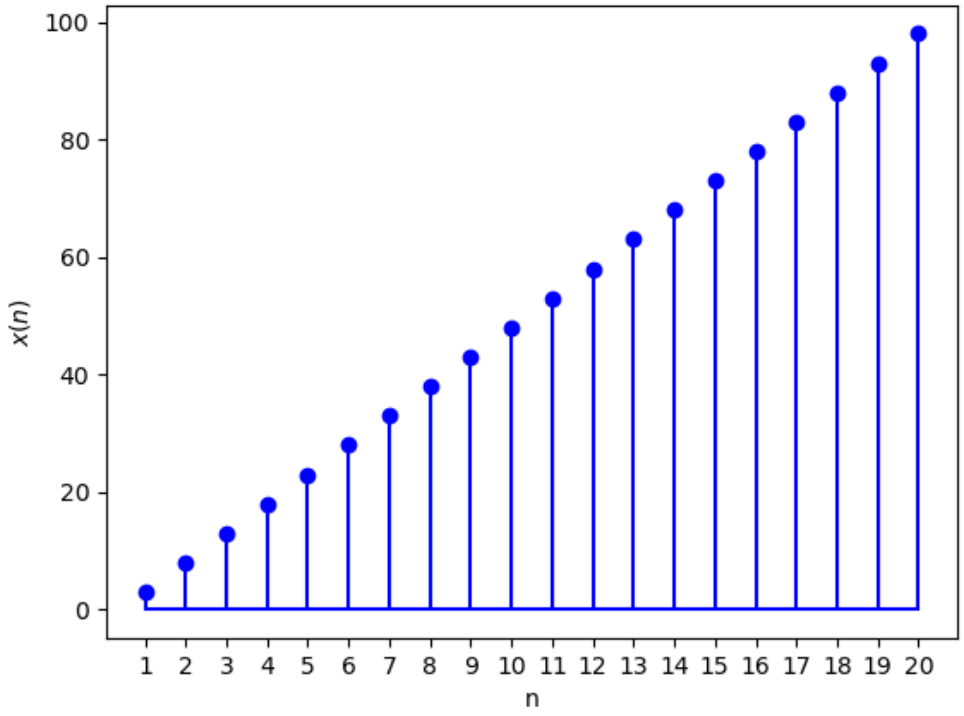

Fig. 0. Arithmetic Progression Plot