Arithmetic Progression Problem

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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 1: Parameters for the Arithmetic Progression

$$x(n) = [x(0) + (n)d] \times u(n) \tag{1}$$
$$x(n) = [3 + (n)5] \times u(n) \tag{2}$$
$$78 = [3 + (k)5] \times u(k) \tag{3}$$
$$X(z) = \frac{3 + 2z^{-1}}{(1 - z^{-1})^2} \quad |z| > 1 \tag{4}$$

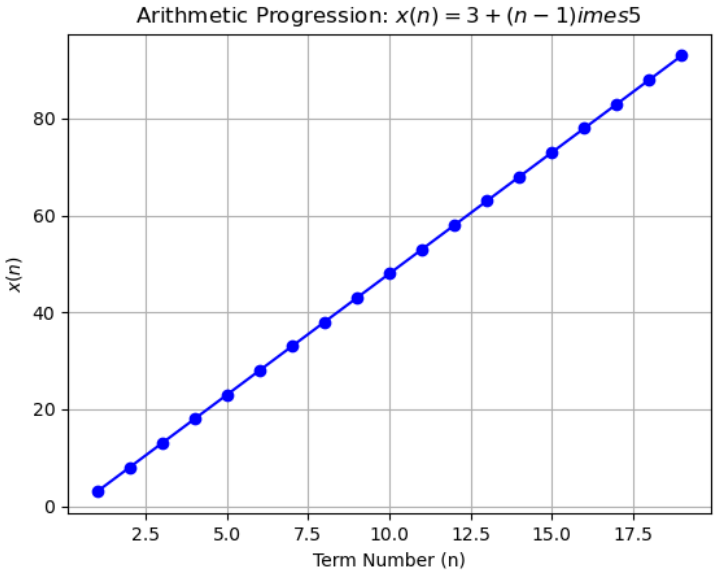

Figure 1: Arithmetic Progression Plot