

# Arithmetic Progression Problem

SAMMETA SAIPOORNA  
EE23BTECH11055

## Question

Which term of the arithmetic progression (AP): 3, 8, 13, 18, ... 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

$$x(n) = [x(0) + (n)d] \times u(n) \quad (1)$$

$$x(n) = [3 + (n)5] \times u(n) \quad (2)$$

$$78 = [3 + (k)5] \times u(k) \quad (3)$$

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