DISCRETE MATHEMATICS

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1 Arithmetic Progression Problem

Which term of the arithmetic progression (AP): 3, 8, 13, 18, . . . , is 78?

Parameter	Value	Description
First term (x_0)	3	Initial term in the AP
Common difference (d)	5	Difference between consecutive terms
n-th term (x_n)	78	Target term in the AP

Table 1: Input Parameters for Arithmetic Progression

To find the term number (n) when the n-th term (x_n) is 78 in the arithmetic progression (AP) with the given input parameters, we can use the formula:

$$x_n = x_0 + (n-1)d$$

Substituting the values from Table 1:

$$78 = 3 + (n-1) \times 5$$

Now, solve for n:

$$\begin{aligned} 78 &= 3 + 5(n-1) \\ 75 &= 5(n-1) \\ 15 &= n-1 \\ n &= 16 \end{aligned}$$

Therefore, the term number (n) when $x_n = 78$ in the given arithmetic progression is 16.