NCERT Discrete

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Question 10.5.2.8:
An AP consists of 50 terms of which 3^{rd} term is 12 and the last term is 106. Find the 29^{th} term.
Solution :

x_3	x_{50}
12	106

Table 1: Given inputs

General form of n^{th} term of an AP is

$$x_n = x_0 + nd \tag{1}$$

Where d is the common difference of an AP.
Given that x_3 is 12.

$$x_0 + 3d = 12 \tag{2}$$

Given that x_{50} is 106.

$$x_0 + 50d = 106 \tag{3}$$

By solving equations (2) and (3) we get $d = 2$ and $x_0 = 6$.
From (1), we know that

$$x_{29} = x_0 + 29d \tag{4}$$

By substituting values of x_0 and d in equation (4) we get $x_{29} = 64$.