Arithmetic Progressions Ex 9.5 Q48

Answer :

$S_q = 63q - 3q^2$

We know

$a_q = S_q - S_{q-1}$

$\therefore a_q = 63q - 3q^2 - 63(q-1) + 3(q-1)^2$

$a_q = 66 - 6q$

Now, $a_p = -60$

$\Rightarrow 66 - 6p = -60$

$\Rightarrow 126 = 6p$

$\Rightarrow p = 21$

$a_{11} = 66 - 6 \times 11 = 0$

Arithmetic Progressions Ex 9.5 Q49

Answer :

$S_m = 4m^2 - m$

We know

$a_m = S_m - S_{m-1}$

$\therefore a_m = 4m^2 - m - 4(m-1)^2 + (m-1)$

$a_m = 8m - 5$

Now,

$a_n = 107$

$\Rightarrow 8n - 5 = 107$

$\Rightarrow 8n = 112$

$\Rightarrow n = 14$

$a_{21} = 8(21) - 5 = 163$

Arithmetic Progressions Ex 9.5 Q50

Answer :

$a_n = -4n + 15$
$\Rightarrow a_1 = -4 + 15 = 11$
Also, $a_2 = -8 + 15 = 7$
Common difference, $d = a_2 - a_1 = 7 - 11 = -4$
Now,
$S_{20} = \frac{20}{2}[2 \times 11 + (20 - 1)(-4)]$
$= 10(22 - 76)$
$= -540$

Answer :

First term, $a_1 = -12$
Common difference, $d = a_2 - a_1 = -9 - (-12) = 3$
$a_n = 21$
$\Rightarrow a + (n - 1)d = 21$
$\Rightarrow -12 + (n - 1) \times 3 = 21$
$\Rightarrow 3n = 36$
$\Rightarrow n = 12$

Therefore, number of terms in the given A.P. is 12.

Now, when 1 is added to each of the 12 terms, the sum will increase by 12.

So, the sum of all terms of the A.P. thus obtained

$= S_{12} + 12$
$= \frac{12}{2}[2(-12) + 11(3)] + 12$
$= 6 \times (9) + 12$
$= 66$

Answer :

$S_n = 3n^2 + 4n$

We know

$a_n = S_n - S_{n-1}$
$\therefore a_n = 3n^2 + 4n - 3(n - 1)^2 - 4(n - 1)$
$\Rightarrow a_n = 6n + 1$

$a_{25} = 6(25) + 1 = 151$

********** END **********