

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, $d=a_2-a_1=-9-\left(-12\right)=3$ $a_n=21$ $\Rightarrow a+(n-1)d=21$ $\Rightarrow -12+(n-1)\times 3=21$ $\Rightarrow 3n=36$ $\Rightarrow n=12$

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 ********