Arithematic Progressions Ex 19.4 Q27

Let the number of terms is n.
Now the sum of the series is:

$$1+3+5+\cdots+2001$$

Here $l=2001$ and $d=2$.
Therefore

$$\begin{aligned} l &= a+(n-1)d \\ 2001 &= 1+(n-1)\cdot 2 \\ 2(n-1) &= 2000 \\ n-1 &= 1000 \\ n &= 1001 \end{aligned}$$

Therefore the sum of the series is:

$$\begin{aligned} S &= \frac{1001}{2}\left[2+(1001-1)2\right] \\ &= 1001^2 \\ &= 1002001 \end{aligned}$$

Arithematic Progressions Ex 19.4 Q28

Let the number of terms to be added to the series is n.
Now $a=-6$ and $d=0.5$.
Therefore

$$\begin{aligned} -25 &= \frac{n}{2}\left[2(-6)+(n-1)(0.5)\right] \\ -50 &= n\left[-12+0.5n-0.5\right] \\ -12.5n+0.5n^2+50 &= 0 \\ n^2-25n+100 &= 0 \\ n &= 20,5 \end{aligned}$$

Therefore the value of n will be either 20 or 5.

Arithematic Progressions Ex 19.4 Q29

Here the first term $a=2$. Let the common difference is d.
Now

$$\frac{5}{2}\left[2a+(5-1)d\right]=\frac{1}{4}\left[\frac{5}{2}\left[2(a+5d)+(5-1)d\right]\right]$$

$$\frac{5}{2}\left[2\cdot 2+4d\right]=\frac{5}{8}\left[2\cdot 2+14d\right]$$

$$10+10d=\frac{5}{2}+\frac{35}{4}d$$

$$\frac{5}{4}d=-7.5$$

$$d=-6$$

The 20^{th} term will be:

$$a+(n-1)d=2+(20-1)(-6)$$
$$=-112$$

Hence it is shown.

Arithematic Progressions Ex 19.4 Q30

$$S_{(2n+1)}=S_1=\frac{(2n+1)}{2}\left[2a+(2n+1-1)d\right]$$

$$S_1=\frac{(2n+1)}{2}\left[2a+2nd\right]$$

$$=(2n+1)(a+nd) \qquad \text{---(i)}$$

Sum of odd terms $= S_2$

$$S_2=\frac{(n+1)}{2}\left[2a+(n+1-1)(2d)\right]$$

$$=\frac{(n+1)}{2}\left[2a+2nd\right]$$

$$S_2=(n+1)(a+nd) \qquad \text{---(ii)}$$

From equation (i) and (ii),

$$S_1:S_2=(2n+1)(a+nd):(n+1)(a+nd)$$

$$S_1:S_2=(2n+1);(n+1)$$

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