Arithematic Progressions Ex 19.1 Q5

$a_n = a_{n-1} + a_{n-2}$ for $n > 2$

$\Rightarrow a_3 = a_{3-1} + a_{3-2} = a_2 + a_1 = 1 + 1 = 2$

$\Rightarrow a_4 = a_{4-1} + a_{4-2} = a_3 + a_2 = 2 + 1 = 3$

$\Rightarrow a_5 = a_{5-1} + a_{5-2} = a_4 + a_3 = 3 + 2 = 5$

$\Rightarrow a_6 = a_{6-1} + a_{6-2} = a_5 + a_4 = 5 + 31 = 8$

$\therefore$ For $n = 1$

$$\frac{a_{n+1}}{a_n} = \frac{a_2}{a_1} = \frac{1}{1} = 1$$

For $n = 2$

$$\frac{a^3}{a_2} = \frac{2}{1} = 2$$

For $n = 3$

$$\frac{a_4}{a_3} = \frac{3}{2} = 1.5$$

For $n = 4$ and $n = 5$

$$\frac{a_5}{a_4} = \frac{5}{3} \quad \text{and} \quad \frac{a_6}{a_5} = \frac{8}{5}$$

$\therefore$ The required series is $1, 2, \frac{3}{2}, \frac{5}{3}, \frac{8}{5}, \ldots$

Arithematic Progressions Ex 19.1 Q6(i)

$3, -1, -5, -9 \ldots$

$$a_1 = 3,\ a_2 = -1,\ a_3 = -5,\ a_4 = -9$$

$$a_2 - a_1 = -1 - 3 = -4$$

$$a_3 - a_2 = -5 - (-1) = -4$$

$$a_4 - a_3 = -9(-5) = -4$$

$\therefore$ Common difirence is $d = -4$

$$a_4 - a_3 = a_3 - a_2 = a$$

$\therefore$ The given sequence is a A.P

$\therefore$

$$a_5 = 3 + (5 - 1)(-4) = -13$$

$$a_6 = 3 + (6 - 1)(-4) = -17$$

$$a_7 = 3 + (7 - 1)(-4) = -21$$

Arithematic Progressions Ex 19.1 Q6(ii)

$-1, \frac{1}{4}, \frac{3}{2}, \frac{11}{4} \ldots$

$$a_1 = -1,\ a_2 = \frac{1}{4},\ a_3 = \frac{3}{2},\ a_4 = \frac{11}{4}$$

$$a_4 - a_3 = a_3 - a_2 = a_2 - a_1 = \frac{5}{4}$$

$\therefore$ Common difference is $d = \frac{5}{4}$

$\therefore$ The given sequence is A.P

$$a_5 = -1 + (5 - 1)\frac{5}{4} = 4$$

$$a_6 = -1 + (6 - 1)\frac{5}{4} = \frac{21}{4}$$

$$a_7 = -1 + (7 - 1)\frac{5}{4} = \frac{26}{4} = \frac{13}{2}$$

Arithematic Progressions Ex 19.1 Q6(iii)

(iii) $\sqrt{2},\ 3\sqrt{2},\ 5\sqrt{2},\ 7\sqrt{2}...$

$$a_1 = \sqrt{2},\ a_2 = 3\sqrt{2},\ a_3 = 5\sqrt{2},\ a_4 = 7\sqrt{2}$$

$$a_4 - a_3 = a_3 - a_2 = a_2 - a_1 = 2\sqrt{2}$$

$\therefore$ The common difference is $2\sqrt{2}$

and the given sequence is A.P

$$a_5 = \sqrt{2} + 2\sqrt{2}\,(5-1) = 9\sqrt{2}$$

$$a_6 = \sqrt{2} + 2\sqrt{2}\,(6-1) = 11\sqrt{2}$$

$$a_7 = \sqrt{2} + 2\sqrt{2}\,(7-1) = 13\sqrt{2}$$

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