Exercise 5.1

Fifth term = $\frac{7}{2}+\frac{1}{2}=4$ Sixth term = 4 + ½ = $\frac{9}{2}$

Seventh term = $\frac{9}{2}+\frac{1}{2}=5$

Therefore, next three terms are 4, $\frac{9}{2}$ and 5.

(iii) −1.2, −3.2, −5.2, −7.2…

It is an AP because difference between consecutive terms is equal.

$\Rightarrow$ −3.2 − (−1.2)

= −5.2 − (−3.2)

= −7.2 − (−5.2) = −2

Common difference (d) = −2

Fifth term = −7.2 − 2 = −9.2Sixth term = −9.2 − 2 = −11.2

Seventh term = −11.2 − 2 = −13.2

Therefore, next three terms are −9.2, −11.2 and −13.2

(iv) −10, −6, −2, 2…

It is an AP because difference between consecutive terms is equal.

$\Rightarrow$ −6 − (−10) = −2 − (−6)

= 2 − (−2) = 4

Common difference (d) = 4

Fifth term = 2 + 4 = 6 Sixth term = 6 + 4 = 10

Seventh term = 10 + 4 = 14

Therefore, next three terms are 6, 10 and 14

(v) $3,3+\sqrt{2},3+2\sqrt{2},3+3\sqrt{2}...$

It is an AP because difference between consecutive terms is equal.

$\Rightarrow 3+\sqrt{2}-3$

$=\sqrt{2},3+2\sqrt{2}-(3+\sqrt{2})$

$=3+2\sqrt{2}-3-\sqrt{2}=\sqrt{2}$

Common difference (d) = $\sqrt{2}$

Fifth term = $3+3\sqrt{2}+\sqrt{2}=3+4\sqrt{2}$

Sixth term = $3+4\sqrt{2}+\sqrt{2}=3+5\sqrt{2}$

Seventh term = $3+5\sqrt{2}+\sqrt{2}=3+6\sqrt{2}$

Therefore,next,three terms are $\left(3+4\sqrt{2}\right),\left(3+5\sqrt{2}\right),\left(3+6\sqrt{2}\right)$

(vi) 0.2, 0.22, 0.222, 0.2222…

It is not an AP because difference between consecutive terms is not equal.

$\Rightarrow 0.22-0.2\neq 0.222-0.22$

(vii) 0, −4, −8, −12…

It is an AP because difference between consecutive terms is equal.

$\Rightarrow -4-0=-8-(-4)$

$=-12-(-8)=-4$

Common difference (d) = −4

Fifth term = −12 − 4 =−16 Sixth term = −16 − 4 = −20

Seventh term = −20 − 4 = −24

Therefore, next three terms are −16, −20 and −24

(viii) $-\frac{1}{2},-\frac{1}{2},-\frac{1}{2},-\frac{1}{2}\ldots$

It is an AP because difference between consecutive terms is equal.

$\Rightarrow -\frac{1}{2}-\left(-\frac{1}{2}\right)=-\frac{1}{2}-\left(-\frac{1}{2}\right)=0$

Common difference (d) = 0

Fifth term = $-\frac{1}{2}+0=-\frac{1}{2}$ Sixth term = $-\frac{1}{2}+0=-\frac{1}{2}$

Seventh term = $-\frac{1}{2}+0=-\frac{1}{2}$

Therefore, next three terms are $-\frac{1}{2},-\frac{1}{2}\,and\,-\frac{1}{2}$

(ix) 1, 3, 9, 27…

It is not an AP because difference between consecutive terms is not equal.

$\Rightarrow 3-1 \neq 9-3$

(x) a, $2a$, $3a$, $4a$…

It is an AP because difference between consecutive terms is equal.

$\Rightarrow\ 2a-a=3a-2a=4a-3a=a$

Common difference (d) = a

Fifth term = $4a+a=5a$ Sixth term = $5a+a=6a$

Seventh term = $6a+a=7a$

Therefore, next three terms are $5a$, $6a$ and $7a$

(xi) a, a^2, a^3, a^4…

It is not an AP because difference between consecutive terms is not equal.

$\Rightarrow a^2-a \neq a^3-a^2$

(xii) $\sqrt{2},\sqrt{8},\sqrt{18},\sqrt{32}...$

$\Rightarrow\ \sqrt{2},2\sqrt{2},3\sqrt{2},4\sqrt{2}$

It is an AP because difference between consecutive terms is equal.

$\Rightarrow\ 2\sqrt{2}-\sqrt{2}=3\sqrt{2}-2\sqrt{2}=\sqrt{2}$

Common difference (d) = $\sqrt{2}$

Fifth term = $4\sqrt{2}+\sqrt{2}=5\sqrt{2}$ Sixth term = $5\sqrt{2}+\sqrt{2}=6\sqrt{2}$

Seventh term = $6\sqrt{2}+\sqrt{2}=7\sqrt{2}$

Therefore, next three terms are $5\sqrt{2},6\sqrt{2},7\sqrt{2}$

(xiii) $\sqrt{3},\sqrt{6},\sqrt{9},\sqrt{12}...$

It is not an AP because difference between consecutive terms is not equal.

$\Rightarrow \sqrt{6}-\sqrt{3} \neq \sqrt{9}-\sqrt{6}$

(xiv) $1^2, 3^2, 5^2, 7^2 \ldots$

It is not an AP because difference between consecutive terms is not equal.

$\Rightarrow 3^2 - 1^2 \neq 5^2 - 3^2$

(xv) $1^2, 5^2, 7^2, 73 \ldots$

$\Rightarrow$ 1, 25, 49, 73…

It is an AP because difference between consecutive terms is equal.

$\Rightarrow 5^2 - 1^2$

$= 7^2 - 5^2 = 73 - 7^2 = 24$

Common difference (d) = 24

Fifth term = 73 + 24 = 97 Sixth term = 97 + 24 = 121

Seventh term = 121 + 24 = 145

Therefore, next three terms are 97, 121 and 145

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