

### Exercise 11(A)

(i) 8, 24, 72, 216, .....

(ii)  $1/8, 1/24, 1/72, 1/216, \dots$

(iii) 9, 12, 16, 24, .....

**Solution:**

(i) Given sequence: 8, 24, 72, 216, .....

Since,

$$24/8 = 3, 72/24 = 3, 216/72 = 3$$

$$\Rightarrow 24/8 = 72/24 = 216/72 = \dots = 3$$

Therefore 8, 24, 72, 216, ..... is a G.P. with a common ratio 3.

(ii) Given sequence:  $1/8, 1/24, 1/72, 1/216, \dots$

Since,

$$(1/24)/(1/8) = 1/3, (1/72)/(1/24) = 1/3, (1/216)/(1/72) = 1/3$$

$$\Rightarrow (1/24)/(1/8) = (1/72)/(1/24) = (1/216)/(1/72) = \dots = 1/3$$

Therefore  $1/8, 1/24, 1/72, 1/216, \dots$  is a G.P. with a common ratio  $1/3$ .

(iii) Given sequence: 9, 12, 16, 24, .....

Since,

$$12/9 = 4/3; 16/12 = 4/3; 24/16 = 3/2$$

$$12/9 = 16/12 \neq 24/16$$

Therefore, 9, 12, 16, 24 ..... is not a G.P.

**Solution:**

It's seen that, the first term is  $(a) = 1$

And, common ratio  $(r) = 4/1 = 4$

We know that, the general term is

$$t_n = ar^{n-1}$$

Thus,

$$t_9 = (1)(4)^{9-1} = 4^8 = 65536$$

**Solution:**

It's seen that, the first term is  $(a) = 1$

And, common ratio  $(r) = \sqrt{3}/1 = \sqrt{3}$

We know that, the general term is

$$t_n = ar^{n-1}$$

Thus,

$$t_7 = (1)(\sqrt{3})^{7-1} = (\sqrt{3})^6 = 27$$

$$\frac{3}{4}, 1\frac{1}{2}, 3, \dots$$

**Solution:**

The given sequence can be rewritten as,

$$\frac{3}{4}, \frac{3}{2}, 3, \dots$$

It's seen that, the first term is  $(a) = \frac{3}{4}$

And, common ratio  $(r) = \frac{(3/2)}{(3/4)} = 2$

We know that, the general term is

$$t_n = ar^{n-1}$$

Thus,

$$t_8 = \left(\frac{3}{4}\right)(2)^{8-1} = \left(\frac{3}{4}\right)(2)^7 = 3 \times 2^5 = 3 \times 32 = 96$$

$$12, 4, 1\frac{1}{3}, \dots$$

**Solution:**

The given sequence can be rewritten as,

$$12, 4, \frac{4}{3}, \dots$$

It's seen that, the first term is  $(a) = 12$

And, common ratio  $(r) = \frac{(4)}{(12)} = \frac{1}{3}$

We know that, the general term is

$$t_n = ar^{n-1}$$

Thus,

$$t_{10} = (12)\left(\frac{1}{3}\right)^{10-1} = (12)\left(\frac{1}{3}\right)^9 = 12 \times \frac{1}{19683} = \frac{4}{6561}$$

**2. 1, 2, 4, 8, .....**

**Solution:**

It's seen that, the first term is  $(a) = 1$

And, common ratio  $(r) = \frac{2}{1} = 2$

We know that, the general term is

$$t_n = ar^{n-1}$$

Thus,

$$t_n = (1)(2)^{n-1} = 2^{n-1}$$