Solutions Of Geometric Progressions Ex 20.1 Q 15

Let a be the first term

then $a = -3$

Now we have

$$a_4 = (a_2)^2$$

$$\Rightarrow \quad ar^3 = (ar)^2$$

$$\Rightarrow \quad ar^3 = a^2r^2$$

$$\Rightarrow \quad r = a = -3$$

$$\therefore \quad a_7 = ar^6 = (-3)^7 = -2187$$

Solutions Of Geometric Progressions Ex 20.1 Q 16

Let the first term is a and the common ratio is r.

Then

$$ar^2 = 24 \quad \ldots\ldots (1)$$

and $ar^5 = 192 \quad \ldots\ldots (2)$

$(2) \div (1)$, we get

$$\frac{ar^5}{ar^2} = \frac{192}{24}$$

$$r^3 = 8$$

$$r = 2$$

Now

$$ar^2 = 24$$

$$a \cdot 2^2 = 24$$

$$a = 6$$

Thus the 10^{th} term will be: $ar^9 = 6 \cdot 2^9 = 3072$

Solutions Of Geometric Progressions Ex 20.1 Q 17

nth term of GP = ar^{n-1}

pth term = q = $a.r^{p-1}$

qth term = p = $a.r^{q-1}$

$$\frac{q}{p} = r^{p-q}$$

$$r = (\frac{q}{p})^{\frac{1}{p-q}}$$

$$a = p(\frac{p}{q})^{\frac{1-q}{p-q}}$$

$$p+q \text{ th term} = p(\frac{q}{p})^{\frac{1-q}{p-q}}(\frac{q}{p})^{\frac{p+q-1}{p-q}}$$

$$= p(\frac{q}{p})^{\frac{1-q+p+q-1}{p-q}}$$

$$= p(\frac{q}{p})^{\frac{p}{p-q}}$$

$$= \frac{q^{\frac{p}{p-q}}}{p^{\frac{p}{p-q}-1}}$$

$$= \frac{q^{\frac{p}{p-q}}}{p^{\frac{q}{p-q}}}$$

$$= (\frac{q^p}{p^q})^{\frac{1}{p-q}}$$

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