

## Notes 9.2 – Geometric Sequences

**Geometric Sequence:**  $a_n = a_1(r)^{n-1}$ , where  $a_n$  is the  $n$ th term,  $r$  is the common ratio, &  $a_1$  is the 1<sup>st</sup> term.

**Ex1)** Write an explicit representation of the pattern & state if it is arithmetic, geometric or neither. Then find the 15<sup>th</sup> term.

a)  $\frac{1}{243}, \frac{1}{81}, \frac{1}{27}, \frac{1}{9}, \dots$

b) 53, 47, 41, 35, ...

c) 2, 3, 5, 9, 17, 33, 65, ...

$a_n =$  \_\_\_\_\_

$a_n =$  \_\_\_\_\_

$a_n =$  \_\_\_\_\_

**Ex2)** Given that  $a_2 = 3$  &  $a_5 = 24$  write an explicit formula if the sequence is a) arithmetic & b) geometric. Then find the values of  $a_3$ , and  $a_4$  in each situation.

a)

b)

$a_n =$  \_\_\_\_\_

$a_n =$  \_\_\_\_\_

$a_3 =$  \_\_\_\_\_  $a_4 =$  \_\_\_\_\_

(These are called the Arithmetic means  $a_2$  &  $a_5$  between )

$a_3 =$  \_\_\_\_\_  $a_4 =$  \_\_\_\_\_

(These are called the Geometric means between  $a_2$  &  $a_5$ )

**Ex 3)** Find the geometric means in the sequence:

a) 1, \_\_\_\_\_, \_\_\_\_\_, -27

b) 6, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, 384

**Ex4)** Find the arithmetic means in the sequence:

a) 5, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, -3

b) -7, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, 1

**Now You Try ☺:**

c) \_\_\_\_\_, \_\_\_\_\_, 6, \_\_\_\_\_,  $\frac{27}{2}$

c) \_\_\_\_\_, \_\_\_\_\_, 3, \_\_\_\_\_, -11

d)  $\frac{1}{9}$ , \_\_\_\_\_, 1, \_\_\_\_\_, \_\_\_\_\_

d) \_\_\_\_\_, 10, \_\_\_\_\_, \_\_\_\_\_, 4, \_\_\_\_\_

**Ex5)** Complete the following statement:

a) 354, 294 is the \_\_\_\_\_<sup>th</sup> term of the geometric sequence: 2, 6, 18, ...

b) 462 is the \_\_\_\_\_<sup>th</sup> term of the arithmetic sequence: -2, 6, 14, ...

**Now you try ☺**

a) 0.0625 is the \_\_\_\_\_<sup>th</sup> term of the geometric sequence: 8, 4, 2, ...

b) 67 is the \_\_\_\_\_<sup>th</sup> term of the arithmetic sequence: 8,  $8\frac{1}{2}$ , 9, ...