

Pre-Calculus
Sec. 10.3 (day 1)
Geometric
Sequences and Series

- A sequence is geometric if the ratios of consecutive terms are the same.

So, in the sequence $a_1, a_2, a_3, a_4, \dots$ $r = \frac{a_2}{a_1} = \frac{a_3}{a_2} = \frac{a_4}{a_3}$

- All geometric sequences will look exponential, where the base is the common ratio (r)

Formula to Memorize:

Finding the nth term formula for a Geometric Sequence:
(explicit or general formula)

$$a_n = a_1 (r)^{n-1} \quad \text{where } r = \text{common ratio}$$

Ex1) Write the first 5 terms of the geometric sequence.

Find r and write the n th term of the sequence as a function

of n . $a_1 = 30$ and $a_{k+1} = -\frac{2}{3}a_k$

Ex2) Find the n th term of the geometric sequence.

$$a_1 = 5 \text{ and } a_3 = \frac{45}{4}, \quad n = 8$$

Ex3) Find the n th term of the geometric sequence.

$$a_1 = 8 \text{ and } r = -\frac{3}{4}, \quad n = 9$$

Ex4) Find the n th term of the geometric sequence.

$$a_3 = \frac{16}{3} \text{ and } a_5 = \frac{64}{27}, \quad n = 7$$

Ex5) Write a formula for the general term (nth term) of the geometric sequence. Then find the indicated nth term.

4, 8, 16, 32,; 10th term