

Name

7.5 ext.

Relate Geometric Sequences to Exponential Functions

Alg I

I can identify, graph, and write geometric sequences.

Geometric Sequence: A sequence of numbers where the ratio of each term is constant. It is called the common ratio (r).

Ch. 7 Quiz

$$a_1, a_1r, a_1r^2, a_1r^3$$

$$a_1 = 5 \quad r = 2$$

$$5, 5 \cdot 2, 5 \cdot 2^2, 5 \cdot 2^3$$

$$5, 10, 20, 40$$

Example 1/2

1) 3, 12, 48, 192

$$\frac{12}{3} = 4$$

$$\frac{48}{12} = 4$$

$$\frac{192}{48} = 4$$

Geometric

2) 7, 16, 25, 34

$$\begin{array}{ccc} \checkmark & \checkmark & \checkmark \\ +9 & +9 & +9 \end{array}$$

Arithmetic

General Rule for a Geometric Sequence:

$$a_n = a_1 r^{n-1}$$

$a_1 = 1^{\text{st}}$ term

$r =$ common ratio

Name

Relate Geometric Sequences

Alg I

to Exponential Functions

I can identify, graph, and write geometric sequences.

Example 3:

7) 1, -5, 25, -125

$$a_1 = 1$$

$$r = \frac{-5}{1} = (-5)$$

$$\frac{25}{-5} = (-5)$$

$$\frac{-125}{25} = (-5)$$

$$a_n = 1 \cdot (-5)^{n-1}$$

$$a_7 = 1 \cdot (-5)^{7-1}$$

$$a_7 = 1 \cdot (-5)^6$$

$$a_7 = 15,625$$

Ch. 7 Quiz

8) 13, 26, 52, 104

$$a_1 = 13$$

$$r = \frac{26}{13} = 2$$

$$\frac{52}{26} = 2$$

$$\frac{104}{52} = 2$$

$$a_n = 13 \cdot (2)^{n-1}$$

$$a_7 = 13 \cdot (2)^{7-1}$$

$$a_7 = 13 \cdot 2^6$$

$$a_7 = 13 \cdot 64$$

$$a_7 = 832$$

9) 432, 72, 12, 2

$$a_1 = 432$$

$$r = \frac{72}{432} = \left(\frac{1}{6}\right)$$

$$r = \frac{12}{72} = \left(\frac{1}{6}\right)$$

$$r = \frac{2}{12} = \left(\frac{1}{6}\right)$$

$$a_n = 432 \cdot \left(\frac{1}{6}\right)^{n-1}$$

$$a_7 = 432 \cdot \left(\frac{1}{6}\right)^{7-1}$$

$$a_7 = 432 \cdot \left(\frac{1}{6}\right)^6$$

$$a_7 = 432 \cdot \frac{1}{46,656}$$

$$a_7 = \frac{1}{108}$$