## Bellwork:

Write the rule for the sequence: .5,1,1.5,2,2.5,...

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## Chapter 12.3: Analyze Geometric Sequences and Series

- In a geometric sequence the ratio of any term to the pervious term is constant

(divide one terms by the previous term)

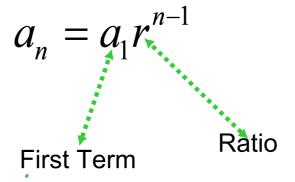
ex. Tell whether the sequence is geometric:

a. 4, 10, 18, 28, 40, ...

b. 625, 125, 25, 5, 1, ...

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## Rule for Geometric Sequence



ex. Write a rule for the nth term of the sequence, find  $a_7$ .

a. 4, 20, 100, 500, ...

b. 152, -76, 38, -19, ...

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ex. One term of a geometric sequence is  $a_4$ =12. The common ratio is r=2. Write a rule for the nth term and graph.

ex. Two terms of a geometric sequence are  $a_3$ =-48 and  $a_6$ =3072. Find a rule for the nth term.

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## Sum of a Finite Geometric Series:

$$S_n = a_1 \left( \frac{1 - r^n}{1 - r} \right)$$

ex. Find the sum of the geometric series:

$$\sum_{i=1}^{16} 4(3)^{i-1}$$

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ex. In 1990, the total box office revenue at US movie theaters was about \$5.02 billion. From 1990 through 2003, the total box office revenue increased by about 5.9% per year. Write a rule for the total revenue, let n=1 be 1990. What was the total box office revenue during 1990-2003?

Homework: Ch 12.3 pg.814 #4-26e,30,36,42,44,48

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