Section 18.3 Name_____

Geometric Sequence

Finding the nth term of a geometric sequence: $a_n = a_1 r^{n-1}$

Find the formula for the nth term of the geometric sequence then find the requested term.

1. 1, 5, 25, … ; a_{10}

2. 12, -4, $\frac{4}{3}$, … ; a_6

Find the sum of the finite geometric sequence $S_n = \frac{a_1(1-r^n)}{1-r}$ where r not equal 1.

3. -4, 8, -16, … ; n = 5

4. $\sum_{n=1}^{5} \left(\frac{2}{5}\right)^n$

Find the sum of the infinite geometric sequence $S = \frac{a_1}{1-r}, \ |r| < 1, \ r \neq 0$ where r not equal 1

5. $1 + \frac{1}{4} + \frac{1}{16} + \ldots$

6. $4 - 2 + 1 + \ldots$

9. Find an equivalent fraction for the repeating decimal using geometric series. .444444….

Applications

10. A laboratory ore sample contains 600 mg of a radioactive material with a half-life of 1 hour. Find the amount of radioactive material in the sample at the beginning of the fifth hour.

11. A Facebook post is sent to ten people. Each of the ten people in turn shares it with to ten other people, and the process is repeated. What is the total number of people who have received the post after four of these cycles?

12. The temperature of a hot water spa is 70 degrees F. Each hour the temperature is 5% higher than during the previous hour. Find the temperature of the spa after 4 hours. Round to the nearest tenth.