

Check In: Geometric Sequences and Series

Answer all questions in the spaces provided.

1. Answer the following questions about the geometric sequence 3, 12, 48, 192,

a. Find t_{12} .

b. Find t_n .

2. Find the number of terms in the sequence 3, 6, 12, ..., 3072.

3. Find first five terms of the sequence that has $t_1 = 40$ and $t_4 = \frac{1}{25}$.

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- In a geometric sequence, $t_4 = 40$ and $t_8 = 640$. Find t_{11} .
- A painting grows in value by 5% per year. If the painting is worth \$1200 right now what will it be worth in 8 years?
- Find S_{12} of the following series:
$$-3 + 6 - 12 + 24 - 48 + \dots$$

7. a. Find the sum of the series $243 + 81 + 27 + \dots + \frac{1}{243}$.
- b. Write this series in sigma notation.
8. The first, fourth, and last terms of a geometric series are 2, 16, and 4096 respectively. Find the sum of all the terms.

9. A business pays \$500 to rent a piece of office equipment for one year. The rent will increase by 10% each year.

a. How much will the company pay the fifth year that they rent the equipment?

b. How much would they pay in total for 10 years of rent?

10. a. Evaluate the following:

$$\sum_{n=1}^{\infty} 4 \left(\frac{1}{3}\right)^{n-1}$$

b. Explain why S_{∞} exists.

11. Explain why you cannot evaluate the following:

$$\sum_{n=1}^{\infty} 8 \left(\frac{5}{4}\right)^{n-1}$$