

Do Now:

In a geometric sequence: $t_3 = 150$ and $t_5 = 3750$.

a) Find r .

$$\begin{array}{ccccc} \underline{150}, & \underline{\quad\quad\quad}, & \underline{3750} & & \\ t_3 & t_4 & t_5 & & \end{array}$$

b) Find t_1 .

c) Give the explicit formula for the geometric sequence.

d) Use the explicit formula to find the 10th term of the sequence.

Geometric Series: the sum of the terms of a Geometric sequence

Given a geometric series the **sum** (S_n) of the first n terms is given by

$$S_n = \frac{(t_1)[1 - (r)^n]}{(1 - r)}$$

Ex) Given the geometric sequence: **3, 6, 12, 24, ...**

a) what is r ? _____ b) what is t_1 ? _____

c) Plug in these values to solve for the **sum** of the first **six** terms.

$$S_6 =$$

More practice:

1) Given the series $3 + 4.5 + 6.75 + 10.125 + \dots$

a) What is t_1 ? _____

b) What is r ? _____

c) What the sum of the first ten terms (to the nearest tenth of a degree)?

$$S_{10} =$$

2) Find S_3 of the geometric series $1 + 2 + 4 + 8 + \dots$

3) Find Find S_{15} of the geometric series $2 + (-6) + 18 + (-54) + \dots$

4) Find Find S_6 of the geometric series $4 + 6 + 9 + 13.5 + \dots$

5) Use the geometric series formula to find the sum of the first n terms: $2 + 4 + 8 + 16 + 32$

6) Use the geometric series formula to find the sum of the first n terms: $1 + 1.2 + 1.44 + 1.728$

HW: Finite Geometric Worksheet

Finite Geometric Series

$$S_n = \frac{(t_1)[1 - (r)^n]}{(1 - r)}$$

Evaluate the related series of each sequence.

1) 2, 12, 72, 432

2) -1, 5, -25, 125

3) -2, 6, -18, 54, -162

4) -2, -12, -72, -432, -2592

Evaluate each geometric series described.

15) $1 - 4 + 16 - 64\dots, n = 9$

16) $-2 - 6 - 18 - 54\dots, n = 9$

17) $1 - 5 + 25 - 125\dots, n = 7$

18) $-3 - 6 - 12 - 24\dots, n = 9$

19) $a_1 = 4, a_n = 1024, r = -2$

20) $a_1 = 4, a_n = 8748, r = 3$

Determine the number of terms n in each geometric series.

21) $a_1 = -2, r = 5, S_n = -62$

22) $a_1 = 3, r = -3, S_n = -60$