Warm Up: Pre-Calc 9/11 Day 10

1) Find the sum of the first 5 terms of a geometric sequence whose first term is 3 and ratio is 4.

2) Find the 13th term, a_{13}, of the geometric sequence from item 1.

Feb 27-7:39 AM

Solutions to Warm Up: Pre-Calc

1) 1023

2) 50,331,648

Feb 27-7:39 AM

Solutions to P.W.: pg. 26 #10 - 17

10) 52.525

11) ~~8√3~~ E GH Shel o 1

12) 1,092 miles

13) S5 = 31/32, S6 = 63/64

1, 3, 9

$S_6 = \frac{3(1-3^6)}{1-3}$

Feb 27-7:39 AM

Solutions to P.W.: pg. 26 #10 - 17

14) $S_n = \frac{2^n - 1}{2^n}$

15) S8 = -637.5

16) 679.98

17) $\sum_{k=1}^{8} -2.5(2)^{k-1}$

Feb 27-7:39 AM

W.A.L.T.: Day 10

Determine if a sequence converges or diverges.

W.A.S.I:

We can determine if a sequence converges or diverges and find the sum of a infinite geometric series.

Mar 7-9:45 AM

Notes!!! Converge Vs. Diverge

Converge: If the terms of an infinite sequence approach some number as the term number increases, then the sequence converges.

Diverge: If the terms do not approach some number, then the sequence diverges.

Mar 7-1:33 PM

In Class Work:pg. 27 #3

3. For each infinite geometric sequence below, answer the following questions.

a. Determine the common ratio for each sequence.

b. Which of the sequences converge and which diverge? For each sequence that converges, determine, if possible, the value to which the terms are approaching.

I. 0.025, 0.25, 2.5, 25, 250, . . .

II. 100, 50, 25, 12.5, 6.25, . . .

III. $-4.2, 4.2\ -4.2, 4.2, -4.2, \ldots$

IV. $\frac{1}{9}, -\frac{1}{3}, 1, -3, 9, \ldots$

V. $25, \frac{25}{\sqrt{5}}, \frac{25}{5}, \frac{25}{5\sqrt{5}}, \frac{25}{25}, \ldots$

VI. 32,000, 320, 3.2, 0.032, 0.00032, . . .

VII. $1, \sqrt{2}, 2, 2\sqrt{2}, 4, \ldots$

Mar 7-1:33 PM

I. 0.025, 0.25, 2.5, 25, 250, . . .

II. 100, 50, 25, 12.5, 6.25, . . .

III. $-4.2, 4.2\ -4.2, 4.2, -4.2, \ldots$

IV. $\frac{1}{9}, -\frac{1}{3}, 1, -3, 9, \ldots$

V. $25, \frac{25}{\sqrt{5}}, \frac{25}{5}, \frac{25}{5\sqrt{5}}, \frac{25}{25}, \ldots$

VI. 32,000, 320, 3.2, 0.032, 0.00032

VII. $1, \sqrt{2}, 2, 2\sqrt{2}, 4, \ldots$

What do you notice about the ones that converge compared to the ones that diverge?

Sep 7-9:47 AM

Notes!!! Sum of an Infinite Geometric Series

Let's start with the partial sum

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

Let $|r| < 1$.

What happens to r as n goes to infinity?

What then happens to the entire formula?

Mar 7-1:33 PM

Notes!!! Sum of an Infinite Geometric Series

Actual Formula

$$S_n = \frac{a_1}{1 - r}$$

Mar 7-1:33 PM

In Class Work:

pg. 30 #12 - 14

Mar 7-1:33 PM

Today's Activities:

- Notes converge and diverge.

P.W. for tonight:

- pg. 30 #12 - 18

Day 10

Feb 27-7:23 AM

Check Your Understanding

12. Find the value of $-3 + 2 - \frac{4}{3} + \frac{8}{9} - \ldots$.

13. Critique the reasoning of others. Amy says, "Each term of an infinite geometric series must be less than the previous term for the series to converge." Roger points out that if r is negative, this is not true. Rewrite Amy's statement so that it is true.

14. Give an example of an infinite geometric series that diverges.

Sep 11-11:48 AM

LESSON 2-3 PRACTICE

15. Write the sum $8 + 2.4 + 0.72 + 0.216 + \ldots$ using summation notation.

16. Make use of structure. Express the repeating decimal $0.4444\ldots$ as a fraction.

17. Solve for r: $\sum_{n=1}^{\infty} 5r^n = 2.5$.

18. An infinite series converges to 10 with a common ratio of 0.6. What is a_1?

Sep 11-11:48 AM