10.4

Pre-AP Precal

Series and Sequences

Name ANSWERS

Date _____

Find the sum, if it exists.

G 1. $a + \left(-\frac{a}{10}\right) + \frac{a}{100} + \left(-\frac{a}{1000}\right) + \cdots$

$\frac{109}{11}$

G 2. In a geometric progression, the 5th term is $\frac{9}{4}$ and the 11th term is 144. Find the first 3 terms.

$\frac{9}{64}, \pm\frac{9}{32}, \frac{9}{16}$

G 3. What is the 7th term of the geometric progression $-625, 125, \ldots$?

$\frac{-1}{25}$

A 4. The ninth term of an arithmetic progression is 25 and the common diffference is 1.5 What is the first term?

13

G 5. If p, 5, and 12 are consecutive terms of a geometric sequence, find the value of p.

$\frac{25}{12}$

Express using sigma notation.

6. $-12 - 7 - 2 + 3 + 8 + 13$

A $\sum_{n=1}^{6} 5n - 17$

7. Write the first 4 terms of the geometric sequence whose 5th term is 6 and whose common ratio is $-\frac{3}{2}$.

G $\frac{32}{27}, \frac{-16}{9}, \frac{8}{3}, -4$

8. If $a_{13} = 7$ and $a_{17} = 23$ in an arithmetic sequence, find the sum of the first 20 terms.

A -60

State the next 2 terms of the sequence and give a formula for the nth term.

9. 72, 70, 68, 66, 64, 62, 60

A $a_n = 74 - 2n$

10. In an arithmetic sequence, $a_5 = 6x + y$ and $a_8 = 9x - 5y$. Find a_{22} and the sum of the first 22 terms.

A $a_{22} = 23x - 33y$

$S_{22} = 275x - 264y$

11. Which term is 153 if an arithmetic sequence begins $-9, -3, 3, 9, \ldots$?

A $n = 28$

G 12. Find the common ratio and the next 2 terms for the geometric sequence $6, 3, \frac{3}{2}, \ldots$.

$r = \frac{1}{2}$ $\frac{3}{4}, \frac{3}{8}$

A 13. How many terms of the arithmetic series $18 + 12 + 6 + \cdots$ must be added for the sum to be -2070?

30

G 14. Find the sum of the geometric series $\frac{1}{64} + \frac{1}{16} + \frac{1}{4} + \cdots + 16$.

$\frac{1365}{64}$

A 15. Find the sum of the series $8 + 2 - 4 - 10 \cdots - 106$.

-980

State the next 2 terms of the sequence and give a formula for the nth term.

G 16. 3, 9, 27, 81, 243, 729, 2187

$a_n = 3(3)^{n-1}$

G 17. Find the sum of the first 7 terms of the geometric series $162 + (-54) + 18 + \cdots$.

$\frac{1094}{9}$

A 18. Find the sum of the first 16 terms of the sequence $-18, -15, -12, \ldots$

72

A 19. In an arithmetic sequence, $a_2 = 5k + 3j$ and $a_3 = 4k + 4j$. Find a_8.

$-k + 9j$

Simplify.

20. $\sum_{c=1}^{5}(17 - 3c)$

40

Find the sum, if it exists.

21. $\frac{1}{4} + \frac{1}{2} + 1 + 2 + \cdots$

G series diverges

G 22. $9 + 3 + 1 + \cdots$

$\frac{27}{2}$

A 23. Find the 38th term of the arithmetic sequence $103, 99, 95, \ldots$.

-45

G 24. Which term is $\frac{1}{625}$ in the geometric progression $3125, 625, 125, \ldots$?

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