

PreCalculus Chapter 1 Test - Mr. Lee

Study Guide

Multiple Choice

Identify the choice that best completes the statement or answers the question.

- _____ 1. Find the first 5 terms of the sequence with $a_1 = 6$ and $a_n = 2a_{n-1} - 1$ for $n \geq 2$.
- a. 1, 2, 3, 4, 5
b. 6, 11, 21, 41, 81
c. 6, 12, 24, 48, 96
d. 6, 7, 8, 9, 10
- _____ 2. Find the first 5 terms of the sequence $a_n = 2^n - 5$.
- a. -4, -1, 4, 11, 20
b. -3, -1, 3, 11, 27
c. 7, 9, 13, 21, 37
d. -3, -1, 1, 3, 5
- _____ 3. Write a possible explicit rule for n th term of the sequence 23.1, 20.2, 17.3, 14.4, 11.5, 8.6, ...
- a. $a_n = 26 - 2.9n$
b. $a_n = 23.1 - 2.9n$
c. $a_n = 23.1(2.9^n)$
d. $a_n = 23.1(2.9n)$
- _____ 4. Write the series $-\frac{1}{2} + \frac{1}{4} - \frac{1}{6} + \frac{1}{8} - \frac{1}{10} + \frac{1}{12}$ in summation notation.
- a. $\sum_{k=1}^6 (-1)^k \left(\frac{1}{2k} \right)$
b. $\sum_{k=1}^6 (-1)^{k+1} \left(\frac{1}{2k} \right)$
c. $\sum_{k=1}^6 (-1)^k \left(\frac{1}{2} \right) k$
d. $\sum_{k=1}^6 (-1)^{k+1} \left(\frac{1}{2} \right) k$
- _____ 5. Expand the series $\sum_{k=2}^6 (-1)^k (7 - k)k$ and evaluate.
- a. 0
b. 56
c. 50
d. 6
- _____ 6. Evaluate the series $\sum_{k=1}^{22} k$.
- a. 506
b. 253
c. 22
d. 23
- _____ 7. Determine whether the sequence -1, 7, 15, 23, 31, ... appears to be an arithmetic sequence. If so, find the common difference and the next three terms in the sequence.
- a. Yes; common difference -8; next three terms are 23, 15, 7
b. Yes; common difference 7; next three terms are 38, 45, 52
c. Not an arithmetic sequence
d. Yes; common difference 8; next 3 terms are 39, 47, 55
- _____ 8. Find the 22nd term in the arithmetic sequence -5, -9, -13, -17, -21, ...
- a. -93
b. -84
c. -110
d. -89
- _____ 9. Find the missing terms in the arithmetic sequence 18, ____, ____, ____, 42.
- a. 24, 36, 48
b. 24, 30, 36
c. 6, 12, 18
d. 48, 78, 108

- _____ 10. Find the 5th term of the arithmetic sequence with $a_7 = 25$ and $a_{13} = 55$.
- a. 5
 - b. 20
 - c. 15
 - d. -5
- _____ 11. Find the sum for the arithmetic series $\sum_{k=1}^{13} 15k - 4$.
- a. 13
 - b. 101
 - c. 1313
 - d. 2626
- _____ 12. A marching band formation consists of 8 rows. The first row has 5 musicians, the second has 7, the third has 9, and so on. How many musicians are in the last row?
- a. 17 musicians
 - b. 19 musicians
 - c. 21 musicians
 - d. 96 musicians
- _____ 13. Write the arithmetic series $5 + 1 - 3 - 7 - 11 - 15 - 19$ in summation notation.
- a. $\sum_{k=1}^7 (5 - 4k)$
 - b. $\sum_{k=1}^7 (9 - 4(k - 1))$
 - c. $\sum_{k=1}^7 (5 - 4(k + 1))$
 - d. $\sum_{k=1}^7 (9 - 4k)$
- _____ 14. Determine whether the sequence 12, 40, 68, 96 could be geometric or arithmetic. If possible, find the common ratio or difference.
- a. It could be geometric with $r = 28$.
 - b. It could be arithmetic with $d = -28$.
 - c. It is neither.
 - d. It could be arithmetic with $d = 28$.
- _____ 15. Find the 7th term of the geometric sequence $-4, 12, -36, 108, -324, \dots$
- a. 8,748
 - b. 972
 - c. -2,920
 - d. -2,916
- _____ 16. Find the 7th term of the geometric sequence with $a_3 = 16$ and $a_5 = 64$.
- a. 384
 - b. 112
 - c. 512
 - d. 256
- _____ 17. Find the first 3 terms of the geometric sequence with $a_6 = -128$ and $a_{11} = 4,096$.
- a. 4, -16, 64
 - b. -4, 16, -64
 - c. -4, 8, -16
 - d. 4, -8, 16
- _____ 18. Identify the smallest subset of the real numbers that contains the number 0.5.
- a. integers
 - b. rational numbers
 - c. whole numbers
 - d. irrational numbers
- _____ 19. Which is the correct recursive formula for the sequence?
 $\{-2, 1, 4, 7, \dots\}$
- a. $u_1 = 4; u_n = u_{n-1} - 18$
 - b. $u_1 = -2; u_n = u_{n-1} + 3$
 - c. $u_1 = 3; u_n = u_{n-1} + 3$
 - d. $u_1 = 18; u_n = u_{n-1}$
- _____ 20. Select the correct description of the sequence:
 $\{-12, -17, -22, -27, -32, \dots\}$
- a. Arithmetic with $d = -17$
 - b. Arithmetic with $d = -5$
 - c. Arithmetic with $d = -22$
 - d. Not arithmetic

- ____ 21. Find the sum of $\sum_{k=1}^{32} (4k + 3)$.
- a. 2208 c. 2207
b. 2206 d. 2211
- ____ 22. Determine whether the sequence is arithmetic, geometric, or neither.
3, 5.6, 8.2, 10.8, 13.4, . . .
- a. geometric b. neither c. arithmetic
- ____ 23. Find the common ratio for geometric sequence $10(5)^{n-1}$.
- a. $\frac{5}{8}$ c. 8
b. $\frac{11}{8}$ d. 5

Matching

Match each vocabulary term with its definition.

- a. arithmetic sequence
b. geometric sequence
c. recursive formula
d. sequence
e. term of a sequence
f. infinite sequence
g. finite sequence
- ____ 24. a list of numbers that often form a pattern
- ____ 25. an element or number in the sequence
- ____ 26. a formula for a sequence in which one or more previous terms are used to generate the next term
- ____ 27. a sequence with infinitely many terms
- ____ 28. a sequence with a finite number of terms