

Sequences and Series Practice Test

Date _____ Period _____

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Determine if the sequence is arithmetic. If it is, find the common difference.

1) $-23, -31, -39, -47, \dots$

2) $-23, -32, -41, -50, \dots$

3) $14, 7, 0, -7, \dots$

4) $21, 12, 3, -6, \dots$

Find the three terms in the sequence after the last one given.

5) $-34, -134, -234, -334, \dots$

6) $-21, -16, -11, -6, \dots$

Find the explicit formula.

7) $-22, -222, -422, -622, \dots$

8) $35, 31, 27, 23, \dots$

Find the recursive formula.

9) $10, 8, 6, 4, \dots$

10) $23, 223, 423, 623, \dots$

Find the term named in the problem.

11) $-39, -49, -59, -69, \dots$

Find a_{40}

12) $-27, -57, -87, -117, \dots$

Find a_{40}

13) $-14, -10, -6, -2, \dots$

Find a_{34}

14) $-2, -32, -62, -92, \dots$

Find a_{25}

Find the missing term or terms in each arithmetic sequence.

15) ..., 37, ____, -163, ...

16) ..., 36, ____, 96, ...

Determine if the sequence is geometric. If it is, find the common ratio.

17) -4, 12, -36, 108, ...

18) -1, 4, -16, 64, ...

19) -1, -5, -25, -125, ...

20) -1, 6, -36, 216, ...

Find the three terms in the sequence after the last one given.

21) 2, -12, 72, -432, ...

22) -4, -20, -100, -500, ...

Find the recursive formula.

23) -1, -6, -36, -216, ...

24) 2, 12, 72, 432, ...

Find the explicit formula.

25) 4, 8, 16, 32, ...

26) -2, -6, -18, -54, ...

Find the term named in the problem.

27) 4, 8, 16, 32, ...

Find a_{11}

28) 1, 5, 25, 125, ...

Find a_9

29) -1, -3, -9, -27, ...

Find a_9

30) 4, -12, 36, -108, ...

Find a_{10}

Evaluate each arithmetic series described.

31) $a_1 = 14, a_n = 188, n = 30$

32) $a_1 = 10, a_n = 66, n = 15$

33) $\sum_{i=1}^{10} (2i + 6)$

34) $\sum_{i=1}^{12} (4 - 10i)$

Evaluate each geometric series described.

35) $\sum_{n=1}^7 2 \cdot (-5)^{n-1}$

36) $\sum_{n=1}^8 5^{n-1}$

37) $a_1 = 1, a_7 = 15625, r = 5$

38) $a_1 = 1, a_8 = -2187, r = -3$

Determine if each geometric series converges or diverges.

39) $-0.9 - 0.18 - 0.036 - 0.0072 \dots$

40) $-3 + 12 - 48 + 192 \dots$

41) $\sum_{k=1}^{\infty} 2 \cdot 3^{k-1}$

42) $\sum_{n=1}^{\infty} -\frac{125}{64} \cdot \left(\frac{4}{5}\right)^{n-1}$

Evaluate each infinite geometric series described.

43) $\sum_{k=1}^{\infty} \left(-\frac{1}{2}\right)^{k-1}$

44) $\sum_{i=1}^{\infty} -\frac{3}{2} \cdot \left(\frac{1}{5}\right)^{i-1}$

45) $-\frac{1}{6} + \frac{1}{9} - \frac{2}{27} + \frac{4}{81} \dots$

46) $32 + 16 + 8 + 4 \dots$

Answers to Sequences and Series Practice Test (ID: 1)

- | | | | |
|--|---|---|----------------------|
| 1) $d = -8$ | 2) $d = -9$ | 3) $d = -7$ | 4) $d = -9$ |
| 5) $-434, -534, -634$ | 6) $-1, 4, 9$ | 7) $a_n = 178 - 200n$ | 8) $a_n = 39 - 4n$ |
| 9) $a_n = a_{n-1} - 2$
$a_1 = 10$ | 10) $a_n = a_{n-1} + 200$
$a_1 = 23$ | 11) $a_{40} = -429$ | 12) $a_{40} = -1197$ |
| 13) $a_{34} = 118$ | 14) $a_{25} = -722$ | 15) -63 | 16) 66 |
| 17) $r = -3$ | 18) $r = -4$ | 19) $r = 5$ | 20) $r = -6$ |
| 21) $2592, -15552, 93312$ | 22) $-2500, -12500, -62500$ | 23) $a_n = a_{n-1} \cdot 6$
$a_1 = -1$ | |
| 24) $a_n = a_{n-1} \cdot 6$
$a_1 = 2$ | 25) $a_n = 4 \cdot 2^{n-1}$ | 26) $a_n = -2 \cdot 3^{n-1}$ | 27) $a_{11} = 4096$ |
| 28) $a_9 = 390625$ | 29) $a_9 = -6561$ | 30) $a_{10} = -78732$ | 31) 3030 |
| 32) 570 | 33) 170 | 34) -732 | 35) 26042 |
| 36) 97656 | 37) 19531 | 38) -1640 | 39) Converges |
| 40) Diverges | 41) Diverges | 42) Converges | 43) $\frac{2}{3}$ |
| 44) $-\frac{15}{8}$ | 45) $-\frac{1}{10}$ | 46) 64 | |