

## 3-30 Test Review 2

Date \_\_\_\_\_ Period \_\_\_\_\_

**Determine if the sequence is arithmetic. If it is, find the common difference, the term named in the problem, and the three terms in the sequence after the last one given.**

1) 1, 4, 9, 16, ...

Find  $a_{36}$ 

2) -14, 6, 26, 46, ...

Find  $a_{33}$ 

**Given the first term and the common difference of an arithmetic sequence find the term named in the problem and the three terms in the sequence after the last one given.**

3)  $a_1 = 23, d = 6$

Find  $a_{30}$ 

4)  $a_1 = -4, d = -8$

Find  $a_{39}$ 

**Given the recursive formula for an arithmetic sequence find the first five terms and the term named in the problem.**

5)  $a_n = a_{n-1} - 30$

$a_1 = 32$

Find  $a_{25}$ 

6)  $a_n = a_{n-1} - 200$

$a_1 = -16$

Find  $a_{25}$ 

**Determine if the sequence is geometric. If it is, find the common ratio and the 8th term.**

7) 1, 4, 16, 64, ...

8) -2, 4, -8, 16, ...

**Given the recursive formula for a geometric sequence find the common ratio, the first five terms, and the 8th term.**

9)  $a_n = a_{n-1} \cdot 4$

$a_1 = 1$

10)  $a_n = a_{n-1} \cdot 6$

$a_1 = 1$

**Given the first term and the common ratio of a geometric sequence find the 8th term and the three terms in the sequence after the last one given.**

11)  $a_1 = 4, r = 3$

12)  $a_1 = -4, r = -2$

**Evaluate each arithmetic series described.**

13)  $(-17) + (-22) + (-27) + (-32)\dots, n = 12$

14)  $4 + 9 + 14 + 19\dots, n = 15$

15)  $a_1 = 24, d = 7, n = 20$

16)  $a_1 = 14, d = 8, n = 15$

17)  $\sum_{m=1}^{25} (3m + 5)$

18)  $\sum_{i=1}^{12} (6i - 14)$

**Evaluate each geometric series described.**

19)  $-4 + 20 - 100 + 500\dots, n = 6$

20)  $2 - 12 + 72 - 432\dots, n = 7$

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

22)  $\sum_{m=1}^{10} 3^{m-1}$

**Determine if each geometric series converges or diverges.**

23)  $4 + 16 + 64 + 256\dots$

24)  $6 + 2 + \frac{2}{3} + \frac{2}{9}\dots$

**Evaluate each infinite geometric series described.**

25)  $3 + \frac{3}{2} + \frac{3}{4} + \frac{3}{8}\dots$

26)  $3.9 + 1.56 + 0.624 + 0.2496\dots$

27)  $\sum_{n=1}^{\infty} -0.7 \cdot 0.9^{n-1}$

28)  $\sum_{k=1}^{\infty} -6 \cdot \left(\frac{1}{5}\right)^{k-1}$

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Date \_\_\_\_\_ Period \_\_\_\_\_

**Determine if the sequence is arithmetic. If it is, find the common difference, the term named in the problem, and the three terms in the sequence after the last one given.**

1) 1, 4, 9, 16, ...

Find  $a_{36}$ 

Not arithmetic

2) -14, 6, 26, 46, ...

Find  $a_{33}$ 

Common Difference:  $d = 20$   
 Next 3 terms: 66, 86, 106  
 $a_{33} = 626$

**Given the first term and the common difference of an arithmetic sequence find the term named in the problem and the three terms in the sequence after the last one given.**

3)  $a_1 = 23, d = 6$

Find  $a_{30}$ 

Next 3 terms: 29, 35, 41

$a_{30} = 197$

4)  $a_1 = -4, d = -8$

Find  $a_{39}$ 

Next 3 terms: -12, -20, -28

$a_{39} = -308$

**Given the recursive formula for an arithmetic sequence find the first five terms and the term named in the problem.**

5)  $a_n = a_{n-1} - 30$

$a_1 = 32$

Find  $a_{25}$ 

First Five Terms: 32, 2, -28, -58, -88

$a_{25} = -688$

6)  $a_n = a_{n-1} - 200$

$a_1 = -16$

Find  $a_{25}$ 

First Five Terms: -16, -216, -416, -616, -816

$a_{25} = -4816$

**Determine if the sequence is geometric. If it is, find the common ratio and the 8th term.**

7) 1, 4, 16, 64, ...

Common Ratio:  $r = 4$ 

$a_8 = 16384$

8) -2, 4, -8, 16, ...

Common Ratio:  $r = -2$ 

$a_8 = 256$

**Given the recursive formula for a geometric sequence find the common ratio, the first five terms, and the 8th term.**

9)  $a_n = a_{n-1} \cdot 4$  Common Ratio:  $r = 4$   
 $a_1 = 1$  First Five Terms: 1, 4, 16, 64, 256  
 $a_8 = 16384$

10)  $a_n = a_{n-1} \cdot 6$  Common Ratio:  $r = 6$   
 $a_1 = 1$  First Five Terms: 1, 6, 36, 216, 1296  
 $a_8 = 279936$

**Given the first term and the common ratio of a geometric sequence find the 8th term and the three terms in the sequence after the last one given.**

11)  $a_1 = 4, r = 3$

Next 3 terms: 12, 36, 108

$a_8 = 8748$

12)  $a_1 = -4, r = -2$

Next 3 terms: 8, -16, 32

$a_8 = 512$

Evaluate each arithmetic series described.

13)  $(-17) + (-22) + (-27) + (-32)\dots, n = 12$

-534

14)  $4 + 9 + 14 + 19\dots, n = 15$

585

15)  $a_1 = 24, d = 7, n = 20$

1810

16)  $a_1 = 14, d = 8, n = 15$

1050

17)  $\sum_{m=1}^{25} (3m + 5)$

1100

18)  $\sum_{i=1}^{12} (6i - 14)$

300

Evaluate each geometric series described.

19)  $-4 + 20 - 100 + 500\dots, n = 6$

10416

20)  $2 - 12 + 72 - 432\dots, n = 7$

79982

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

-86

22)  $\sum_{m=1}^{10} 3^{m-1}$

29524

Determine if each geometric series converges or diverges.

23)  $4 + 16 + 64 + 256\dots$

Diverges

24)  $6 + 2 + \frac{2}{3} + \frac{2}{9}\dots$

Converges

Evaluate each infinite geometric series described.

25)  $3 + \frac{3}{2} + \frac{3}{4} + \frac{3}{8}\dots$

6

26)  $3.9 + 1.56 + 0.624 + 0.2496\dots$

6.5

27)  $\sum_{n=1}^{\infty} -0.7 \cdot 0.9^{n-1}$

-7

28)  $\sum_{k=1}^{\infty} -6 \cdot \left(\frac{1}{5}\right)^{k-1}$

$-\frac{15}{2}$