

Name: \_\_\_\_\_

### Using Explicit Formula of Sequences

Determine whether the following sequences are geometric, arithmetic, or neither. If arithmetic find the common difference. If geometric find the common ratio. If neither explain why.

1.) 6, 24, 96, 384 ...

$a$   $r = 4$

2.) 4, 13, 22, 31 ...

$a$   $d = 9$

3.) -11, -7, -3, 1 ...

$a$   $d = 4$

4.)  $\frac{1}{3}, \frac{2}{3}, 1, \frac{4}{3}, \dots$

$a$   $d = \frac{1}{3}$

5.)  $\frac{3}{5}, \frac{4}{25}, \frac{5}{125}, \frac{6}{625}, \dots$

neither

6.) 1, 3, 7, 13 ...

neither

Write the first six terms of the sequence.

7.)  $a_n = n + 1$

2, 3, 4, 5, 6, 7

8.)  $a_n = \frac{1}{5}n - 7$

-6.8, -6.6, -6.4, -6.2, -6, -5.8

Find the explicit and recursive formula for the arithmetic sequence represented in the given information.

9.) 1, 3, 5, 7...

E:  $a_n = 2n - 1$

R:  $a_n = a_{n-1} + 2$

$a_1 = 1$

10.) 6, 14, 22, 30 ...

E:  $a_n = 8n - 2$

R:  $a_n = a_{n-1} + 8$

$a_1 = 6$

11.) common difference:  $\frac{1}{4}$   
2<sup>nd</sup> term: 9

E:  $a_n = \frac{1}{4}n + 8.5$

R:  $a_n = a_{n-1} + \frac{1}{4}$

$a_1 = 8.75$

12.) Write the 1<sup>st</sup> 6 terms of the sequence:

$a_n = -2 \cdot 5^{n-1}$

-2, -10, -50, -250, -1250, -6250

Find the explicit and recursive formula for the geometric sequence represented by the given information.

13.) 1, -4, 16, -64...

E:  $a_n = (-4)^{n-1}$

R:  $a_n = 4a_{n-1}$   
 $a_1 = 1$

15.) Common ratio: 3  
2<sup>nd</sup> term: 6

14.)  $5, -\frac{5}{3}, \frac{5}{9}, -\frac{5}{27}, \dots$

E:  $a_n = 5(-\frac{1}{3})^{n-1}$

R:  $a_n = -\frac{1}{3}a_{n-1}$   
 $a_1 = 5$

Find the missing terms of the arithmetic sequence.

16.) -20, 15, -10

17.) -26, -22, -18, -14, -10

Find the missing terms on the geometric sequence.

18.) 4, 20, 100

19.) 2, 6, 18, 54, 162

Find the explicit and recursive formula for each of the following.

20.) common difference: 10  
25<sup>th</sup> term: 222

E:  $a_n = 10n - 28$

R:  $a_n = a_{n-1} + 10$   
 $a_1 = -18$

22.) common difference: 4

$a_{24} = 92$

E:  $a_n = 4n - 4$

R:  $a_n = a_{n-1} + 4$   
 $a_1 = 0$

24.) Geometric sequence where  
 $a_3 = 16$  and  $a_6 = 128$

E:  $a_n = 4(2)^{n-1}$

R:  $a_n = 2a_{n-1}$   
 $a_1 = 4$

21.) common ratio: 2

11<sup>th</sup> term: -1024

E:  $a_n = -1(2)^{n-1}$

R:  $a_n = 2a_{n-1}$   
 $a_1 = -1$

23.) Arithmetic sequence where  
8<sup>th</sup> term is 8, 20<sup>th</sup> term is 44

E:  $a_n = 3n - 16$

R:  $a_n = a_{n-1} + 3$   
 $a_1 = -13$

25.) Geometric sequence where  
1<sup>st</sup> term is 4, 4<sup>th</sup> term is 108

$a_n = 4(3)^{n-1}$