**Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date Due:**

**Algebra Regents Review #11**

***Directions:*** *Choose the best answer.  Answer ALL questions. Show ALL work in column 2.* ***If there is no mathematical work to be shown, write an explanation or definition to support your answer!***

|  |  |
| --- | --- |
| * 1. What is the common difference, *d*, for the following sequence?

6, 11, 16, 21, … |  |
| * 1. What is the common ratio, *r*, for the following sequence?

2, 10, 50, … |  |
| * 1. What is the common difference, *d*, in the arithmetic sequence defined by the formula *an* = −3*n* − 2?
 |  |
| * 1. What is the common ratio, *r*, for the geometric sequence represented by the formula https://cl.castlelearning.com/Review/Courses/algebraii/q4550.gif?v=20100204024548?
 |  |
| * 1. Is the following sequence arithmetic or geometric, and what is the common difference (*d*) or the common ratio (*r*) of the sequence?

image1. Arithmetic, *d* = 3 3. Geometric, *r* = 3
2. Geometric, *r* = −image 4. Arithmetic, *r* = −image
 |  |
| * 1. Write the first four terms of the arithmetic sequence, given *a*1 = −3 and *d* = −2.
 |  |
| * 1. Write the first four terms of the geometric sequence as decimals, given *a*1 = 32 and *r* = −image.
 |  |
| * 1. Find the 19th term of the following sequence:

 −20, −17, −14, … |  |
| * 1. Find the 10th term of the sequence:  3, 6, 12, …
 |  |
| * 1. Find the 22nd term of the arithmetic sequence with *a*1 = –6 and a common difference of *d* = 3.
1. 54
2. 60
3. −63
4. 57
 |  |
| * 1. In a geometric sequence, *a*1 = 2.5 and *r* = 1.5. Find *a*20 to the nearest tenth.
 |  |
| * 1. Find the explicit formula for the following sequence.

1, 3, 5, 7, 91. *an* = 2*n* − 1
2. *an* = *n* + 2
3. *an* = 2*n* + 1
4. *an* = 2*n* + 2
 |  |
| * 1. Find the explicit formula for the following sequence:

10, 1, 0.1, 0.01, 0.001 * 1. *an* = 10(0.1)*n* – 1
	2. *an* = 10(0.1)*n*
1. *an* = 10(0.1)*n* + 1
2. *an* = 100(0.1)*n* – 1
 |  |
| * 1. The diagrams below represent the first three terms of a sequence.

https://cl.castlelearning.com/Review/Courses/integratedalgebra/q123805.gif?v=20141030084154Assuming the pattern continues, which formula determines *an*, the number of shaded squares in the nth term?* 1. *an* = 4*n* + 12
	2. *an* = 4*n* + 8
	3. *an* = 4*n* + 4
	4. *an* = 4*n* + 2
 |  |
| * 1. Find the recursive formula for the following sequence:

2, 8, 14, 20, 26* 1. *a*1 = 2,   *an* = *an*-1 + 6
	2. *a*1 = 2,   *an* = 4(*an*-1)
	3. *a*1 = 2,   *an* = 2(*an*-1) + 2
	4. *a*1 = 2,   *an* = *an*+1 + 6
 |  |
| * 1. Find the first five terms of the recursive sequence defined by:

*an* = 2(*an*–1) + *n, a*1 = 0.5 |  |
| * 1. Find the explicit formula for the sequence defined by the following recursive formula: *a*1 = −2, *an* = *an*−1 + 3
	2. *an* = 3*n* – 5
	3. *an* = (*n* − 3) − 2(*n* − 1)
	4. *an* = (*n* + 3) + 2(*n* − 1)
	5. *an* = 4*n* – 5
 |  |
| * 1. Find the explicit formula for the sequence defined by the recursive formula: *a*1 = -2,   *an* = -5(*an*-1)
	2. *an* = 2(-5)*n*-1
	3. *an* = -2(5)*n*-1
	4. *an* = 2(5)*n*-1
	5. *an* = -2(-5)*n*-1
 |  |
| 19. A sunflower is 3 inches tall at week 0 and grows 2 inches each week. Which function(s) shown below can be used to determine the height, *f*(*n*), of the sunflower in *n* weeks? *f*(*n*) = 2*n* + 3 *f*(*n*) = 2*n* + 3(*n* - 1)*f*(*n*) = *f*(*n* - 1) + 2 where *f*(0) = 3 |  |
| 20. Which recursively defined function represents the sequence 3, 7, 15, 31, …?1. *f*(1) = 3, *f*(*n* + 1) = 2*f*(*n*) + 3
2. *f*(1) = 3, *f*(*n* + 1) = 2*f*(*n*) – 1
3. *f*(1) = 3, *f*(*n* + 1) = 2*f*(*n*) + 1
4. *f*(1) = 3, *f*(*n* + 1) = 3*f*(*n*) – 2
 |  |
| 21. If *f*(1) = 3 and *f*(*n*) = -2*f*(*n* - 1) + 1, then *f*(5) =1. -5
2. 11
3. 21
4. 43
 |  |