**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?   image   1. 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, 9   1. *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=20141030084154  Assuming 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 |  |