Algebra Unit 3 Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Unit 3 Special Functions Study Guide Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Per \_\_\_\_\_\_\_\_\_

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| **Arithmetic Sequences** | |
| 1. Give the next 3 terms in the sequence shown below:  -3, -1, 3, 9, \_\_\_\_\_\_\_, \_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_  Is the sequence arithmetic? Explain why or why not. | 2. Write the recursive formula for the following arithmetic sequence in function form.  34, 23, 12, 1, -10, … |
| 3. Write the explicit formula for the following arithmetic sequence.  13, 16, 19, 22, … | 4. Given the first term and the common difference of an arithmetic sequence find the first five terms and the explicit formula.   𝑓(1)=49,  𝑑=6 |
| 5. Find the 61st and 103rd term in the sequence in #4. | 6. Explain what the difference between a recursive formula and explicit formula. When would each be useful? |
| **Discrete and Continuous Functions** | |
| 7. Graph the following function and tell whether it represents a discrete or continuous function.  f(x) = -3x + 2 for x > -2    Domain:  Range:  f(1) = \_\_\_\_\_\_ f(-7) = \_\_\_\_\_\_\_ f(9) = \_\_\_\_\_\_\_\_ | 8. Graph the following function and tell whether it represents a discrete or continuous function.  f(x) = - ½ x + 3 for x = -6, -4, -2, 0, 2    Domain:  Range:  f(0) = \_\_\_\_\_\_ f(-4) = \_\_\_\_\_\_\_ f(4) = \_\_\_\_\_\_\_\_ |
| 9. Does the following function/relationship represent a discrete or continuous function? Explain   |  |  |  |  |  | | --- | --- | --- | --- | --- | | People | 3 | 4 | 5 | 6 | | Cost for Movie | $24.75 | $33.00 | $41.25 | $49.50 |   Give the equation of the relationship: | 10. Does the following function/relationship represent a discrete or continuous function? Explain   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Number of Miles | 1 | 2 | 3 | 4 | | Time (minutes) | 8.52 | 18.33 | 28.14 | 37.95 |   Give the equation of the relationship. |
| **Piecewise Functions** | |
| 11. Given:  Determine:  and | 12. Given:  Determine:  and |
| 13. Graph the following piecewise function | 14. Graph the following piecewise function |
| 15. Write a piecewise function that models the following situation.  The roller skating rink charges the following amount for private parties; for parties with up to 75 guests, the cost is a set-up fee of $450 plus $5 per guest, and for parties with over 75 guests they charge a flat rate of $850. | 16. Write the piecewise function represented by the given graph. |