Algebra I
Unit 3B Review – Graphing Quadratics

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_

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| **What you need to know & be able to do** | **Things to remember** | **Examples** |
| *1. Describe transformations from an equation or graph* | Y = a(x – h)2 + ka: stretches/shrinks & reflectsh: shifts left & rightk: shifts up & downvertex: (-h, k) | 1. Describe the transformations and name the vertex: y = -2(x + 3)2- 9 | 2. Describe the transformations: |
| *2. Create a function using transformations* | Determine your, a, h, and k values | 3. Opens down, shifts up 3 units and shrinks by ¼  | 4. Shifts left 5 and reflects across the x-axis |
| *3. Describe all characteristics of a quadratic function* |  | 5. Vertex: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Axis of Symmetry:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Interval of Increase:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Interval of Decrease:\_\_\_\_\_\_\_\_\_\_\_\_\_\_Extrema: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Max/Min Value: \_\_\_\_\_\_\_\_\_\_\_\_ Domain: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Range: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Y-Intercept: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Zeroes: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_End Behavior: As x 🡪 -∞, y 🡪 \_\_\_\_\_\_ As x 🡪 ∞ , y 🡪 \_\_\_\_\_R.O.C on the interval -2 ≤ x ≤ 0: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  |
| *4. Graph a function in standard or vertex form* | 1. Find your vertex.2. Create a table with 3 values to the left and right of vertex.3. Graph  | 6. [image] | 7. [image] |
| *5. Convert a function from vertex to standard form* | Remember to multiply your “a” value after you have multiplied your binomials | 8. $y=\left(x+2\right)^{2}-8$ | $9. y=-3(x-5)^{2}+1$   |
| *6. Convert a function from standard form to vertex form.*  | Find the vertex and identify your “a” value. | 10. $y=-x^{2}-14x-59$  | 11. $y=x^{2}+6x+9$ |
| *7. Find the average rate of change given an equation* | Find two points and then use slope formula | 12. Calculate the average rate of change for y = x2 + 1 on the interval 0 ≤ x ≤ 2. |
| *8. Apply properties of quadratics to solve problems* | Decide what your x and y represents.Make sure you answer what the question was asking | 13. The equation for the cost of manufacturing lawn mowers is y = 0.008x2 – 0.04x + 75. What number of lawn mowers should be produced to minimize costs? What is the minimum cost? | 14. The height in feet of a rocket after x second is given by y = –16x2 + 128x. What is the maximum height reached by the rocket and how long does it take to reach that height? |
| *9. Compare quadratic functions* |  | 15. Compare the vertex, y-intercept, and rate of change from 1 ≤ x ≤ 2 for each of the functions. Which function has the highest vertex, largest y-intercept, and greatest rate of change?A. Vertex: \_\_\_\_\_\_\_\_ Y-int: \_\_\_\_\_\_\_ Avg R of C: \_\_\_\_\_\_\_

|  |  |
| --- | --- |
| **X** | **Y** |
| 0 | -26 |
| 1 | -12 |
| 2 | -2 |
| 3 | 4 |
| 4 | 6 |
| 5 | 4 |
| 6 | -2 |

B. Vertex: \_\_\_\_\_\_\_\_ Y-int: \_\_\_\_\_\_\_ Avg R of C: \_\_\_\_\_\_\_C. Vertex: \_\_\_\_\_\_\_\_ Y-int: \_\_\_\_\_\_\_ Avg R of C: \_\_\_\_\_\_\_ |
| *12. Graph and solve systems of quadratics* | Types of Solutions: Two solutions One solution No Solution | 16. Solve:[image]Solution: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 17. Solve: [image]Solution: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| *11. Solving quadratic inequalities* | Draw a number line and test your intervals | 18. $y<(x+5)^{2}-7$  | 19.  |