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 + k  a: stretches/shrinks & reflects  h: shifts left & right  k: shifts up & down  vertex: (-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. |  | | |
| *6. Convert a function from standard form to vertex form.* | Find the vertex and identify your “a” value. | 10. | | 11. | |
| *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. | | 19. | |