

Pre-Calculus Worksheet

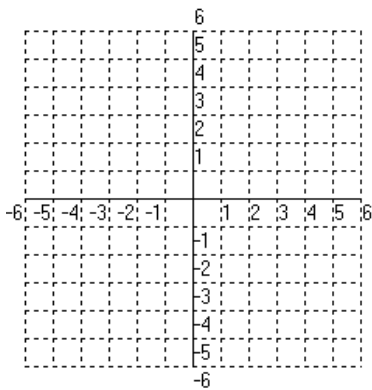
Name: _____

Section 2.1 - Parabolas DAY TWO

Period: _____

I. Give the vertex and axis of symmetry for each parabola. Then find the EXACT VALUE of the zeros (also known as roots or x -intercepts). HINT: An equation where you take the square root of each side. Finally, graph.

1. $y = -(x+1)^2 + 4$

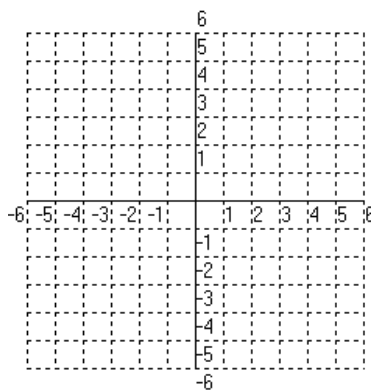


Vertex: _____

Axis of Symm.: _____

Zeros: _____

2. $y = \frac{1}{2}(x-2)^2 + 3$

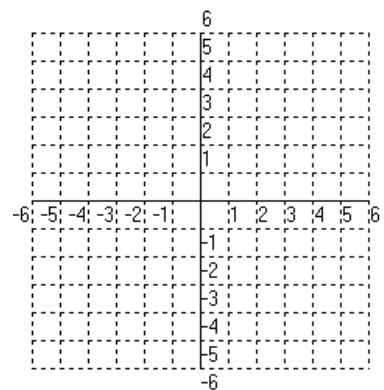


Vertex: _____

Axis of Symm.: _____

Zeros: _____

3. $y = 2(x+3)^2 - 5$



Vertex: _____

Axis of Symm.: _____

Zeros: _____

II. For each function, find its vertex, its maximum or minimum value and where it occurs, and its zeros.

4. $f(x) = 2x^2 + 12x + 18$

Vertex: _____
 The function has a _____ (max or min) value of _____ at _____.
 The zeros of the function are _____.

5. $f(x) = -x^2 + 8x - 11$

Vertex: _____
 The function has a _____ (max or min) value of _____ at _____.
 The zeros of the function are _____.

6. $y = -4x^2 - 8$

7. $y = \frac{1}{2}x^2 - 2x - 3$

Vertex: _____
 The function has a _____ (max or min) value of _____ at _____.
 The zeros of the function are _____.

Vertex: _____
 The function has a _____ (max or min) value of _____ at _____.
 The zeros of the function are _____.

III. Applications.

8. The height y (in feet) of a ball thrown by a child is given by $y = -\frac{1}{8}x^2 + x + 4$ where x is the horizontal distance (in feet) from where the ball is thrown. How high is the ball when it is at its maximum height?

9. The path of a diver is given by $y = -\frac{4}{9}x^2 + \frac{24}{9}x + 12$ where y is the height (in feet) and x is the horizontal distance from the end of the diving board (in feet). What is the maximum height of the diver?

10. You have a 500-foot roll of fencing and a large field. You want to construct a rectangular playground area. What are the dimensions of the largest such yard? What is the largest area?

11. You have a 1200-foot roll of fencing and a large field. You want to make two paddocks by splitting a rectangular enclosure in half. What are the dimensions of the largest such enclosure?

