

## Algebra 2 – Unit 6 Test Review

Use the equation  $y = x^2 + 6x + 5$  for problems 1 – 4.

1. Give the vertex.

$$(-3, -4)$$

2. Give the equation for the axis of symmetry.

$$x = -3$$

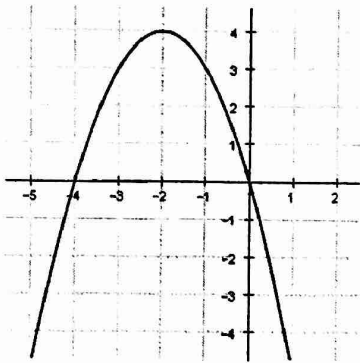
3. Give the y-intercept.

$$y = 5$$

4. Give the direction that the parabola opens.

Up

5. Identify the x-intercepts of the graph.



$$(-4, 0)$$
$$(0, 0)$$

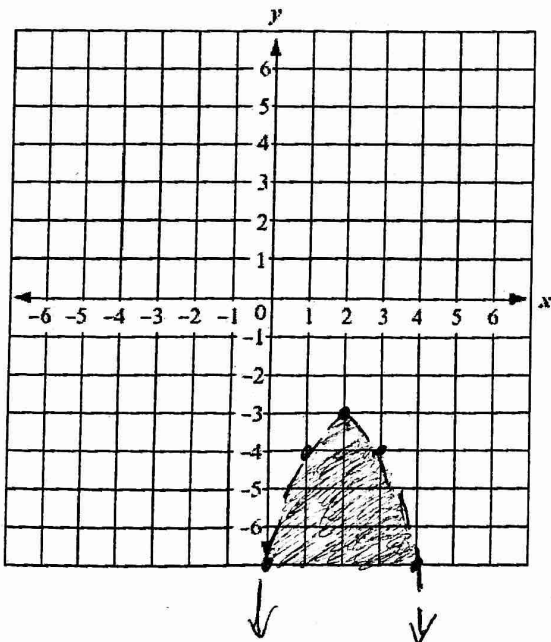
6. How many zeros does the function  $f(x) = x^2 + 8x + 15$  have?

2

7. Solve  $a^2 - 8a - 20 = 0$

$$a = -2, 10$$

8. Sketch a graph of the inequality  $y < -x^2 + 4x - 7$



9. Write an equation for a function with the vertex of (3,5) and is reflected over the x-axis

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

13. Simplify  $(14 - 10i) - (-2 + 10i)$

$$16 - 20i$$

10. What is the vertex of  $y = 2(x-8)^2 + 3$ ?

$$(8, 3)$$

14. Simplify  $(3 + i)(2 + 4i)$

$$2 + 14i$$

11. What are the transformations of  $y = 4(x-2)^2 + 3$ ?

Right 2  
Up 3

Vertical Stretch

15. Simplify  $\frac{3i}{2-i}$

$$\frac{6}{5}i - \frac{3}{5}$$

12. What are the transformations of  $y = -\frac{1}{5}(x+10)^2$ ?

Left 10

Vertical Shrink

Reflection over x-axis

16. Simplify  $i^2$

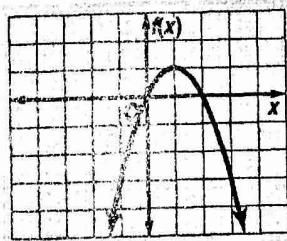
$$-1$$

17. What are the transformations of the graph.

Right 1

Up 1

Reflection over  
x-axis



18. Write  $\frac{6 \pm \sqrt{-18}}{3}$  in simplest form.

$$x = 2 \pm i\sqrt{2}$$

19. What are the roots of the equations  $y = x^2 - 4x$

$$x = 0, 4$$

Solve each quadratic using any method given. Leave any irrational roots in simplified radical form.

20.  $x^2 + 8x + 15 = 0$

$$x = -3, -5$$

21.  $3x^2 + 6x + 5 = 0$

$$x = \frac{-3 + i\sqrt{6}}{3}, \frac{-3 - i\sqrt{6}}{3}$$

22.  $2x^2 + 4x + 6 = 0$

$$x = -1 + i\sqrt{2}, -1 - i\sqrt{2}$$

23.  $x^2 - 13x + 30 = 0$

$$x = 3, 10$$