Algebra 2 - Ch. 1-3 Midterm Review

Short Answer

#1-4: Write a function *g* whose graph represents the indicated transformation of the graph of *f*.

1. $f(x) = -2|x+5| + 5$; translation 2 units left

2. $f(x) = 3x + 3$; horizontal shrink by a factor of $\frac{1}{4}$

3. $f(x) = |x|$; a horizontal stretch by a factor of 3 followed by a translation 2 units to the right

4. $f(x) = |4x| + 6$; horizontal shrink by a factor of $\frac{1}{2}$

Write a rule for *g* described by the transformations of the graph of *f*. Then identify the vertex.

5. $f(x) = (x-3)^2 + 4$; horizontal shrink by a factor of $\frac{1}{2}$ and a translation 1 unit up, followed by a reflection in the *x*-axis.

6. Graph the function and label the vertex and axis of symmetry: $g(x) = -2(x+4)^2 + 5$

7. Write an equation of the parabola in vertex form that passes through $(-1,-2)$ and has vertex $(-6,-6)$

8. Graph the function and label the *x*-intercept(s), vertex, and axis of symmetry: $g(x) = -3(x-5)(x-1)$

9. Write an equation of the parabola in intercept form that has *x*-intercepts of 3 and –4 and passes through $(-5,-4)$

10. Graph the function and label the vertex and axis of symmetry: $g(x) = -\frac{3}{2}x^2 - 6x + 1$

Find the zero(s) of the function:

11. $h(x) = 4x^2 + 64x + 256$

12. $h(x) = -x^2 - 12$

Find the values of *x* and *y* that satisfy the equation.

13. $6 + 9yi = \frac{1}{5}x + 8i$

Find the square root of the number.

14. $\sqrt{-75}$

15. Perform the operation and write the answer in standard form: $(16 + 10i) - (-20 - 4i)$

16. Perform the operation and write the answer in standard form: $(-1 + 3i)(-5 - i)$

17. Find the discriminant of the quadratic equation $11x - 18 = x^2$ and describe the number and type of solutions of the equation.

18. Find the value of *c* that makes $p^2 - 15p + c$ a perfect square trinomial. Then write the expression as the square of a binomial.

Solve the equation.

19. $2(x - 9)^2 - 8 = 3$

20. $3x^2 - 10x = -63 + 8x$

21. $2x^2 - x = -3$

22. Solve the system:

$y = 3x^2 + 2x - 3$

$y = -2x^2 - 3x - 5$

23. Solve the system:

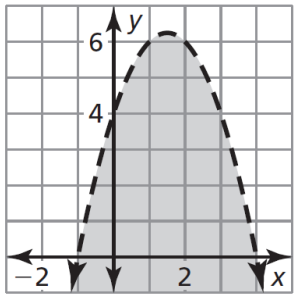
$-x - y = 3$

$-x^2 - x + y = -27$

24. Solve the inequality: $x^2 + 7x < -10$

25. A boy throws a ball into the air. The equation $h = -16t^2 + 22t + 3$ models the path of the ball, where *h* is the height (in feet) of the ball *t* seconds after it is thrown. How long is the ball in the air? Round your answer to the nearest tenth of a second.

26. Which inequality is shown in the graph?



27. The function $g(x) = \frac{1}{3}|x + 2| - 5$ is a combination of transformations of $f(x) = |x|$. Describe the transformation.