#1 - 2. The graph below models a car's distance from a road sign as the car travels at a constant speed. Write an equation that best represents the situation.



#3 - 4. Compare the graphs of the pair of functions. Describe how the graph of the second function relations to the graph of the first function. 4. y = 4|x| and y = 4|x| - 5

3. 
$$y = -3|x|$$
 and  $y = -3|x| + 4$ 

## #5 – 6. Graph the absolute value equation.

5. y = |x - 3|

- 7. What is the vertex of the function y = |3x - 3| + 6?
- 8. What is the vertex of the function y = |x - 2| - 6?
- 9. Graph the equation of y = |x| translated 2 units down. Then find the domain and range.
- 10. Graph the equation of y = |x| translated 3 units left. Then find the domain and range.
- 11. Graph the translation of the function y = |x| with a vertex of (5, 4).
- 12. Graph the translation of the function y = |x| with a vertex of (-4, -2).

Describe the relationship between the graph of y = |x - 4| + 3 and the graph of y = |x| in terms of 13. a vertical and a horizontal translation. Then find the vertex and graph y = |x - 4| + 3.

## #14 – 15. Graph the absolute value inequality.

14. y < |x - 5| - 3

- 15.  $y \le |x+2|+4$
- 16. Find the vertex and graph the function y = -5|x| + 5.

## Write an inequality for the graph.





6. y = |2x - 4| + 3

19. Write an equation for the horizontal translation of y = -|x|.



20. Write the equation that is the translation of y = |x-2| right 9 units and up 5 units.

21. Write the equation that is the translation of y = |x-2| right 11 units and down 8 units.

Find the domain and range of each of the following absolute value functions – use both SET and INTERVAL notation.

22. 
$$f(x) = |x - 4| - 1$$
  
23.  $g(x) = |x + 5| + 12$ 

## **Spiral/Matrices**

Find the values of the variables.

$$24. \begin{bmatrix} -4+t & 0\\ 8 & 11 \end{bmatrix} = \begin{bmatrix} -5 & 0\\ 8 & 3y+2 \end{bmatrix}$$
  
Solve the matrix equation.  
$$25. \begin{bmatrix} -9 & -7\\ 1 & -2 \end{bmatrix} - X = \begin{bmatrix} -6 & 4\\ -2 & 5 \end{bmatrix} \qquad 26. \begin{bmatrix} 7 & -10\\ 2 & -3 \end{bmatrix} X = \begin{bmatrix} 5\\ -6 \end{bmatrix} \qquad 27. \begin{bmatrix} -9 & 31\\ 2 & -7 \end{bmatrix} X = \begin{bmatrix} -6\\ 0 \end{bmatrix}$$
  
Find the product.  
$$28. \begin{bmatrix} 1 & 8\\ 1 & -2 \end{bmatrix} \begin{bmatrix} 9 & 8\\ -2 & 7 \end{bmatrix} \qquad 29. \begin{bmatrix} -1 & -8\\ -5 & -3 \end{bmatrix} \begin{bmatrix} 6 & -7\\ -4 & -5 \end{bmatrix}$$
  
Evaluate the determinant of the matrix.  
$$30. \begin{bmatrix} -2 & 3 & 0\\ -2 & 3 & -1\\ 0 & 2 & -2 \end{bmatrix} \qquad 31. \begin{bmatrix} -2 & -3 & -3\\ -3 & -3 & 0\\ 3 & 0 & 3 \end{bmatrix}$$