

Unit 3 Test Study Guide

1. Which value could represent **a** in the equation of an absolute value graph that is stretched or narrower than normal?

- a. 1 b. $\frac{2}{7}$ c. $\frac{7}{2}$ d. $-\frac{3}{4}$

2. Which value could represent **a** in the equation of an absolute value graph that is reflected over the x-axis.

- a. 1 b. $\frac{2}{7}$ c. $\frac{7}{2}$ d. $-\frac{3}{4}$

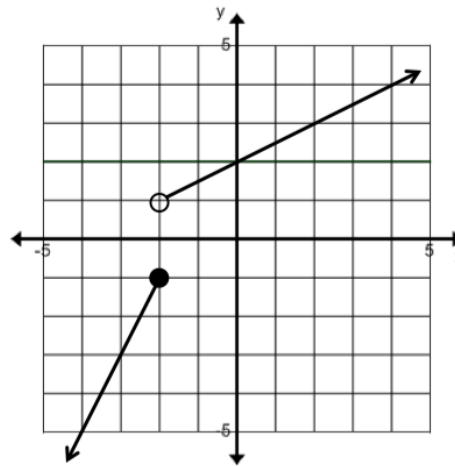
3. Which of the following piecewise functions matches the graph provided?

a. $f(x) = \begin{cases} \frac{1}{2}x + 2 & \text{if } x > -2 \\ 2x + 3 & \text{if } x \leq -2 \end{cases}$

b. $f(x) = \begin{cases} \frac{1}{2}x + 2 & \text{if } x \geq -2 \\ 2x + 3 & \text{if } x < -2 \end{cases}$

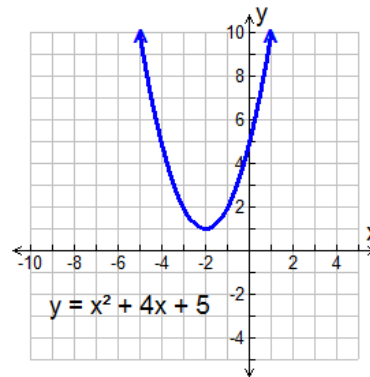
c. $f(x) = \begin{cases} \frac{1}{2}x + 2 & \text{if } x < -2 \\ 2x + 3 & \text{if } x \geq -2 \end{cases}$

d. $f(x) = \begin{cases} \frac{1}{2}x + 2 & \text{if } x \leq -2 \\ 2x + 3 & \text{if } x > -2 \end{cases}$



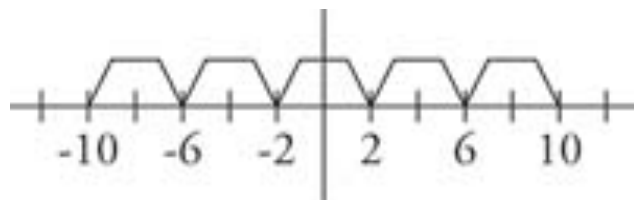
4. Which of the following describes $f(x) = x^2 + 4x + 5$?

- a. Even
b. Odd
c. Both Even and Odd
d. Neither Even nor Odd



5. The following function is considered periodic. Identify its period below.

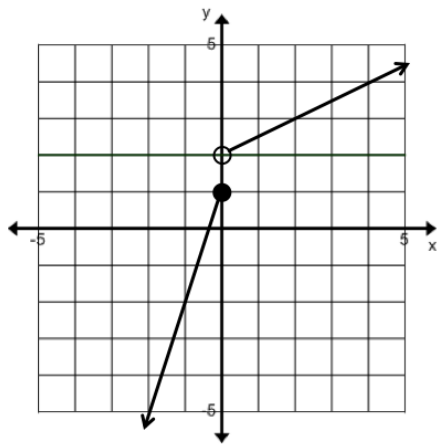
- a. 10
b. 20
c. 2
d. 4



6. What does the “a” value in the absolute value equation represent and what does it do?

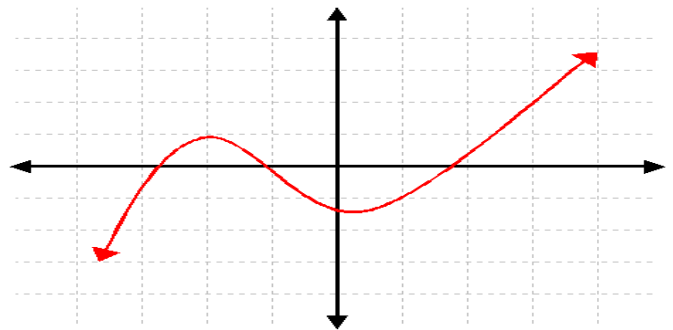
For questions #7-9, fill in all blanks:

7.



$$f(x) = \begin{cases} 3x + 1 & \text{if } x \leq 0 \\ \text{_____} & \text{if } x > 0 \end{cases}$$

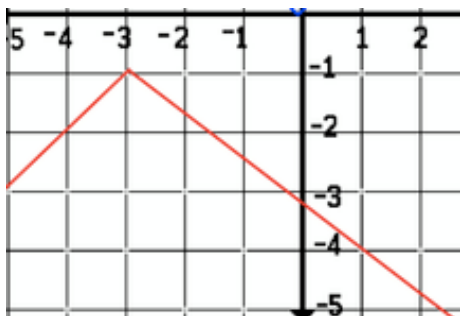
8.



As $x \rightarrow \infty$, $f(x) \rightarrow$ _____

As $x \rightarrow -\infty$, $f(x) \rightarrow$ _____

9.



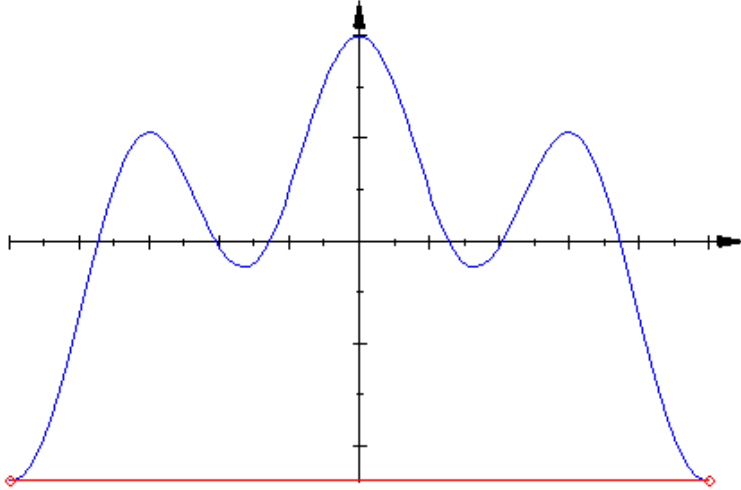
Slopes of the Rays: _____

Vertex: _____

Direction of Opening: _____

Transformation(s): _____

9. Evaluate the following key features.



Relative Minimum(s) _____

Relative Maximum(s) _____

Absolute Minimum(s) _____

Absolute Maximum(s) _____

X-intercept(s) _____

Y-intercept(s) _____

Increasing Interval(s) _____

Decreasing Interval(s) _____

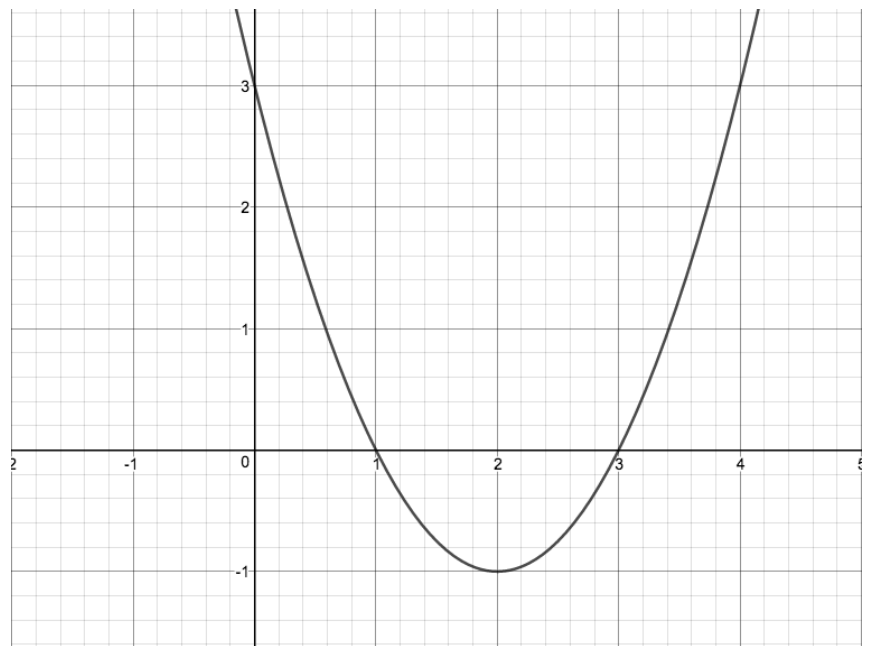
Constant Interval(s) _____

Domain _____

Range _____

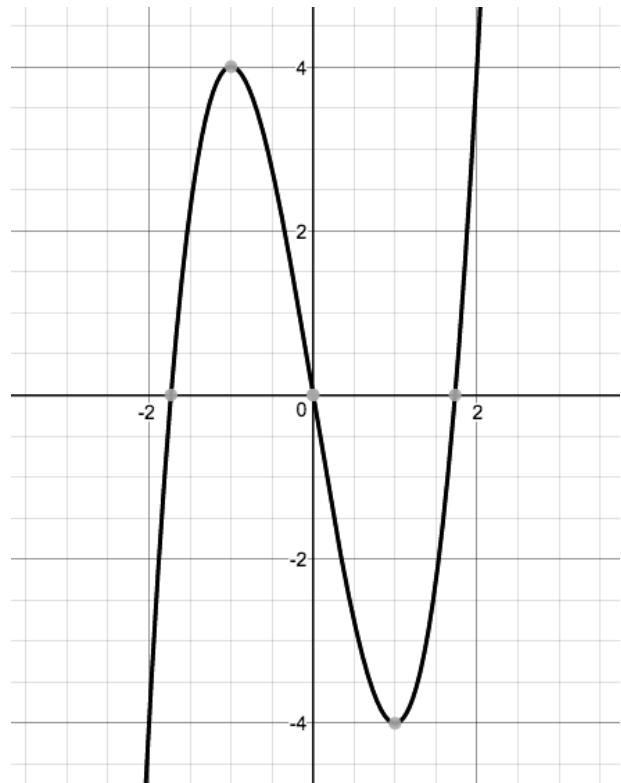
10. Determine the key features from the following graph:

- X-Intercepts:
- Y-Intercepts:
- Relative Minimum:
- Relative Maximum:
- Absolute Minimum:
- Absolute Maximum:
- Increasing Interval:
- Decreasing Interval:
- Domain:
- Range:
- End Behavior: $x \rightarrow -\infty, f(x) \rightarrow$
 $x \rightarrow \infty, f(x) \rightarrow$
- Odd or Even:



11. Determine the key features from the following graph:

- X-Intercepts:
- Y-Intercept:
- Relative Minimum:
- Relative Maximum:
- Absolute Minimum:
- Absolute Maximum:
- Increasing Interval:
- Decreasing Interval:
- Domain:
- Range:
- End Behavior: $x \rightarrow -\infty, f(x) \rightarrow$
 $x \rightarrow \infty, f(x) \rightarrow$
- Odd or Even:



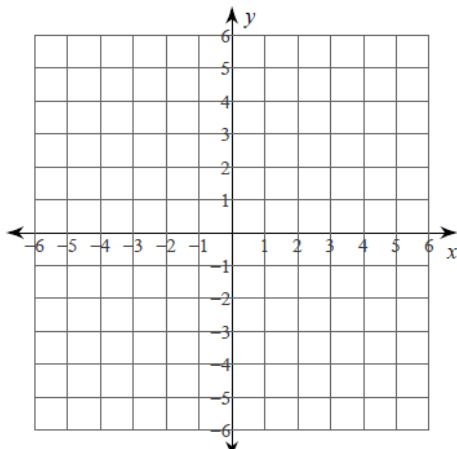
12. Given the function $f(x) = \begin{cases} x + 1 & \text{if } x < 3 \\ 6 - x & \text{if } x \geq 3 \end{cases}$, evaluate the following:

a. $f(0)$

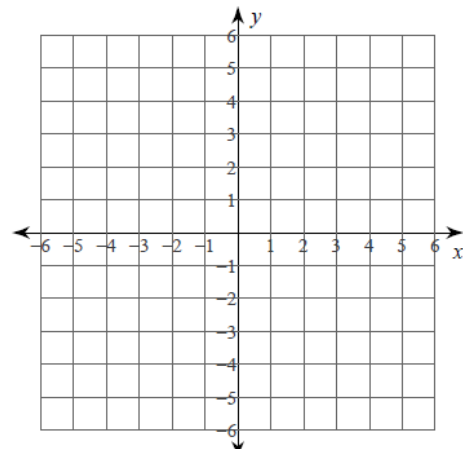
b. $f(3)$

c. $f(6)$

13. Sketch a graph of an odd function and explain why it is odd.



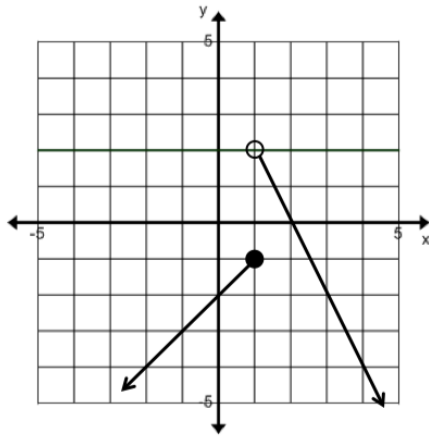
14. Sketch a graph of an even function and explain why it is even.



15. Write an absolute value equation with a vertex of $(-7, 1)$ that passes through the point $(-1, 5)$.

Function:

16. Write a piecewise function that matches the graph provided below.

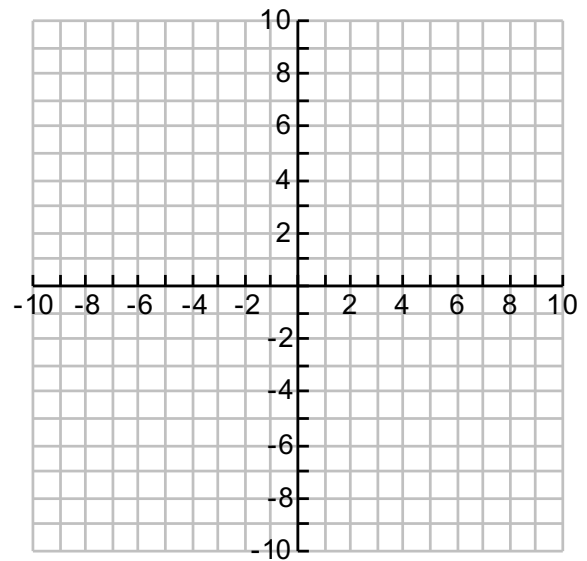
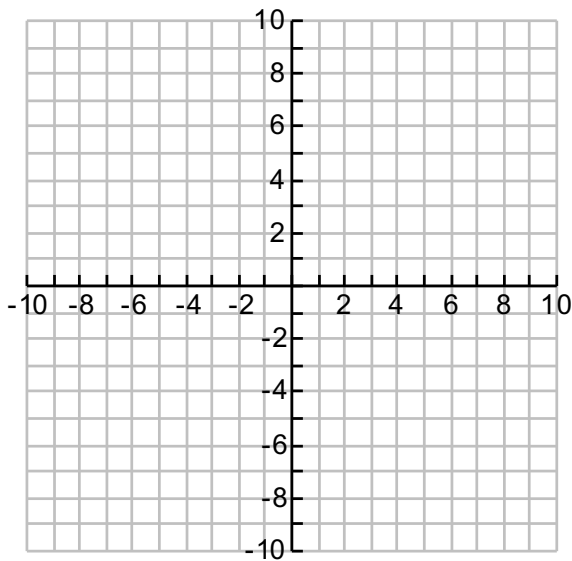


Function:

For questions #17-20, graph the indicated functions on the coordinate plane provided.

17. $f(x) = 4|x + 2| + 3$

$$18. f(x) = \begin{cases} -2 & \text{if } -4 < x \leq 0 \\ 2 & \text{if } 0 < x \leq 4 \\ 6 & \text{if } 4 < x \leq 10 \end{cases}$$

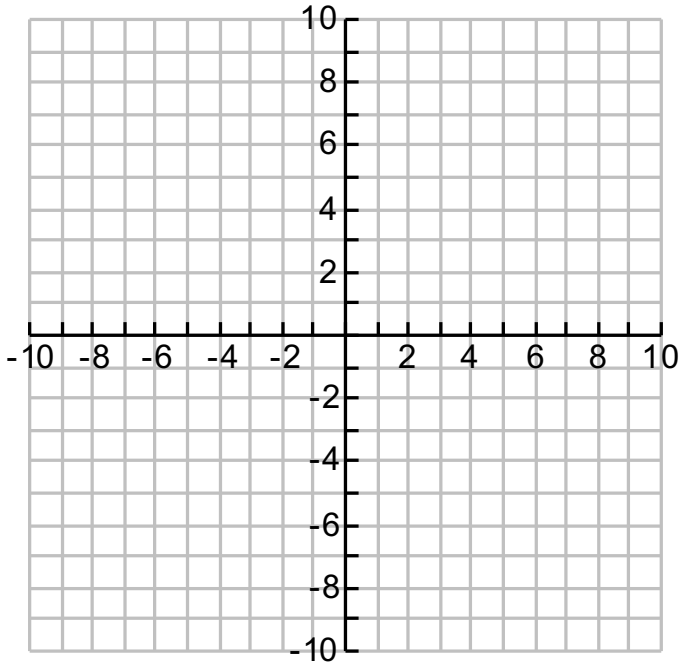


Integrated Math III

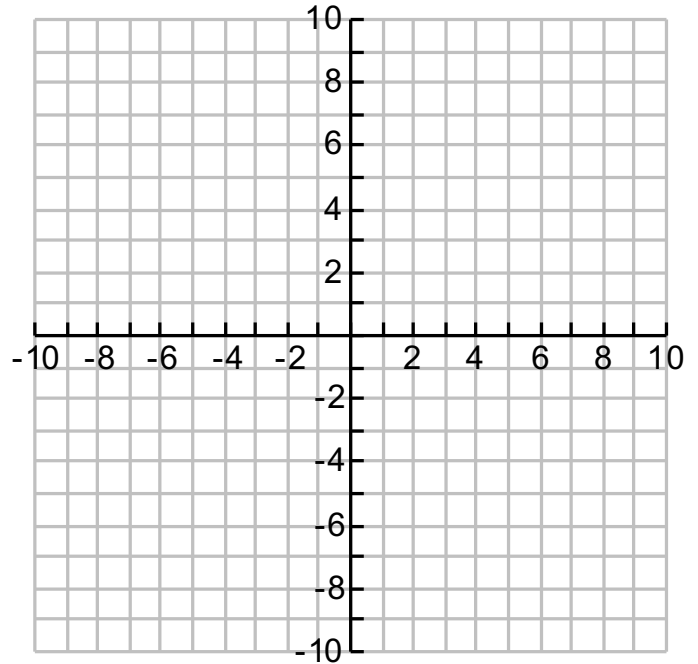
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Per: _____ **Date:** _____

19. Graph the following $y = 2|x - 2| + 3$



20. Graph the following $y = \frac{-2}{3}|x + 1| + 6$



21. Determine the following from the graph:

Slopes of the rays: _____

Vertex: _____

Direction of the opening: _____

Transformations:

