Multiple Choice

Read each question. Then choose the letter of the correct answer.

1. Which describes the translation of \( y = |x - 3| + 5 \)?
   A. \( y = |x| \) translated 3 units left and 5 units up
   B. \( y = |x| \) translated 3 units right and 5 units up
   C. \( y = |x| \) translated 5 units left and 3 units up
   D. \( y = |x| \) translated 5 units right and 3 units up

2. Which of the following is not an important attribute of absolute value functions?
   A. Vertex
   B. Axis of symmetry
   C. Rate of change
   D. \( y \)-intercept

3. The graph of which equation is the graph of \( f(x) = |x| \) reflected in the \( x \)-axis, translated 8 units left, vertically compressed by a factor of \( \frac{1}{2} \), and translated down 5 units?
   F. \( y = -2|x - 8| - 5 \)
   G. \( y = -\frac{1}{2}|x - 8| - 5 \)
   H. \( y = 2|x + 8| - 5 \)
   J. \( y = -\frac{1}{2}|x + 8| - 5 \)

4. Which equation is graphed?

5. How many \( x \)-intercepts does the graph of \( y = 4|x - 12| - 9 \) have?
   F. 0
   H. 2
   G. 1
   J. 3

6. What is the \( y \)-intercept of \( y = 5|x - 2| - 7 \)?
   A. 2
   C. 7
   B. 3
   D. \(-2\)

7. What is the axis of symmetry of \( y = \frac{1}{4}|x + 6| - 3 \)?
   F. \( x = -3 \)
   G. \( y = -3 \)
   H. \( x = 6 \)
   J. \( x = -6 \)

8. What is the equation of an absolute value function with vertical stretch factor \( \frac{1}{3} \) and vertex \((-3, 2)\)?
   A. \( y = \frac{1}{3}|x + 3| + 2 \)
   B. \( y = \frac{1}{3}|x - 3| + 2 \)
   C. \( y = 3|x - 3| + 2 \)
   D. \( y = \frac{1}{3}|x + 3| - 2 \)
Gridded Response

9. What is the minimum of \( f(x) = 2|x + 1| - 3 \)?

10. What is the horizontal translation of \( f(x) = 3|x - 5| + 7 \)?

11. What is the vertical stretch or compression factor of \( f(x) = \frac{1}{2}|x + 2| - 1 \)?

12. What is the \( x \)-coordinate of the vertex of \( f(x) = |x + 9| + 5 \)?

13. If the point \((a, 6)\) is an integer solution to \( y < -|x - 3| + 7 \), what is the value of \( a \)?

Constructed Response

14. Describe the transformations of \( y = -7|x + 41| - 13 \) from the parent function \( f(x) = |x| \).

Describe each transformation of the parent function \( y = |x| \). Then, graph each function.

15. \( y = |x| - 4 \)
16. \( y = |x - 1| - 5 \)
17. \( y = -|x + 4| + 3 \)
18. \( y = 2|x + 1| \)