5-8 Practice
Graphing Absolute Value Functions

Describe how each graph is related to the graph of \( y = |x| \).

1. \[ \text{translated 1 unit up} \]
2. \[ \text{translated 1 unit to the left} \]

Graph each function by translating \( y = |x| \).

3. \[ y = |x| + 2 \]
4. \[ y = |x| - 5 \]
5. \[ y = |x| - 3 \]

Write an equation for each translation of \( y = |x| \).

6. 6 units up \( y = |x| + 6 \)
7. 4 units down \( y = |x| - 4 \)
8. 2.2 units down \( y = |x| - 2.2 \)
9. 3.9 units up \( y = |x| + 3.9 \)

Graph each function by translating \( y = |x| \).

10. \[ y = |x + 7| \]
11. \[ y = |x - 4| \]
12. \[ y = |x + 5| \]
Write an equation for each translation of \( y = |x| \).

13. left 6 units \( y = |x + 6| \)  
14. right 5 units \( y = |x - 5| \)

15. left \( \frac{1}{3} \) units \( y = |x + \frac{1}{3}| \)  
16. right \( \frac{3}{4} \) units \( y = |x - \frac{3}{4}| \)

At the right is the graph of \( y = -|x| \). Graph each function by translating \( y = -|x| \).

17. \( y = -|x| - 1 \)  
18. \( y = -|x + 3| \)

Write an equation for each translation of \( y = -|x| \).

19. 3 units down \( y = -|x| - 3 \)  
20. 6 units left \( y = -|x + 6| \)

21. 6.85 units up \( y = -|x| + 6.85 \)  
22. 0.75 units right \( y = -|x - 0.75| \)

23. **Writing** Describe the difference between adding a constant \( k \) inside the absolute value \( (y = |x + k|) \) and outside the absolute value \( (y = |x| + k) \).

Adding a constant on the inside of the absolute value shifts the vertex to the left or right. Adding a constant on the outside of the absolute value shifts the vertex up or down.

Graph each translation of \( y = |x| \). Describe how the graph is related to the graph of \( y = |x| \).

24. \( y = |x + 1| - 4 \)  
25. \( y = |x - 3| + 2 \)