## GUIDED PRACTICE

1. Vocabulary Explain the reason for the shape of the graph of an absolute-value function.

SEE EXAMPLE 1 Let $g(x)$ be the indicated transformation of $f(x)=|x|$. Write the rule for $g(x)$ and p. 158 graph the function.
2. 5 units down
3. 4 units left

SEE EXAMPLE 2
p. $159 \quad \square$

Translate $f(x)=|x|$ so that the vertex is at the given point. Then graph.
4. $(-4,-5)$
5. $(1,6)$

SEE EXAMPLE 3 Perform each transformation. Then graph.
p. 159
6. Reflect the graph of $f(x)=|2 x+3|-4$ across the $y$-axis.
7. Stretch $f(x)=|x+3|$ vertically by a factor of 2 .
8. Compress $f(x)=|x+3|$ horizontally by a factor of $\frac{2}{3}$.

## PRACTICE AND PROBLEM SOLVING

| Independent Practice |  |
| :---: | :---: |
| For <br> Exercises | See <br> Example |
| $9-11$ | 1 |
| $12-14$ | 2 |
| $15-17$ | 3 |

## Extra Practice

Skills Practice $p$. S7
Application Practice p. S33

Let $g(x)$ be the indicated transformation of $f(x)=|x|$. Write the rule for $g(x)$ and graph the function.
9. 2 units right
10. 1 unit down
11. 4 units left

Translate $f(x)=|x|$ so that the vertex is at the given point. Then graph.
12. $(8,0.5)$
13. (1.5, 4.5)
14. $(-2.5,3)$

Perform each transformation. Then graph.
15. Reflect $f(x)=|x-5|+2$ across the $x$-axis.
16. Compress $f(x)=|2 x|-3$ vertically by a factor of $\frac{1}{4}$.
17. Stretch $f(x)=|2 x|-3$ horizontally by a factor of $\frac{3}{2}$.
18. Football Yard lines of a football field have the relationship shown in the table below ( 0 yard lines are the goal lines).

| $\|c\|$ | Football Field Yard Lines |  |  |  |  |  |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Distance from <br> One End <br> Zone (yd) | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
| Marked Yard <br> Line | 0 | 10 | 20 | 30 | 40 | 50 | 40 | 30 | 20 | 10 | 0 |

a. Write an absolute-value function to find the marked yard line for a given distance from the end zone. (Hint: Graph the ordered pairs to find the transformation from $f(x)=|x|$.)
b. What yard line is 195 feet from the end zone?
c. What if...? Suppose the absolute-value function is based on the distance from the end zone in feet. How would this relationship affect the function?

