

2. step function

3. maximum

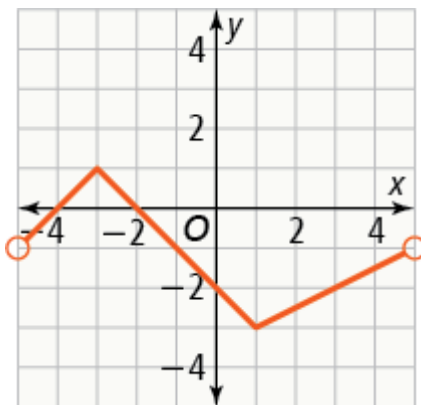
4. transformation

5. zero of the function

7. domain: $(-5, \infty)$; range: $[-4, 1]$; zeros: $x = 1$ and $x = 3$; positive: $(1, 3)$; negative: $(-5, 1)$ and $(3, \infty)$

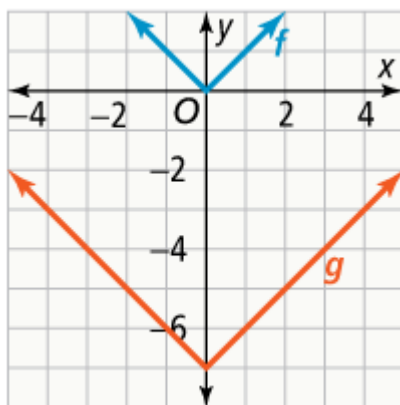
8. domain: $(-5, \infty)$; range: $[-4, 1]$; zero: $x = 2$; positive: $(2, \infty]$; negative: $(-5, 2)$

9.

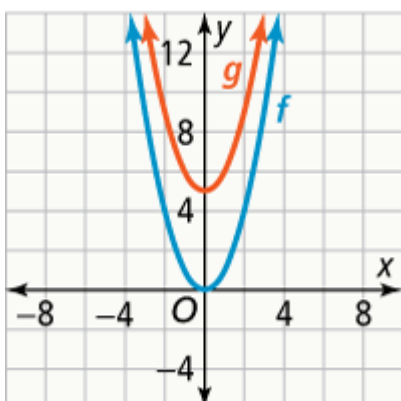


10. domain: $[0, 100]$; range: $[0, 50]$; increasing: none; decreasing: $[0, 100]$; x-intercept: 100; y-intercept: 50; positive: $[0, 100]$; negative: none

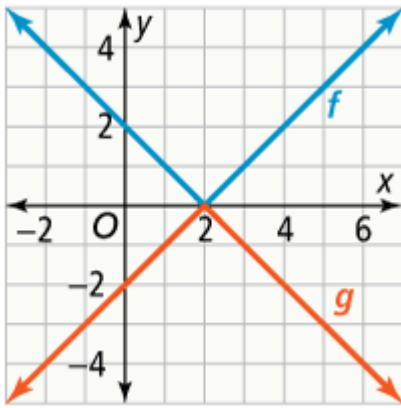
11.



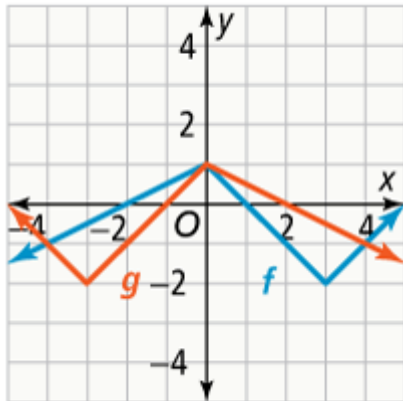
12.



13.

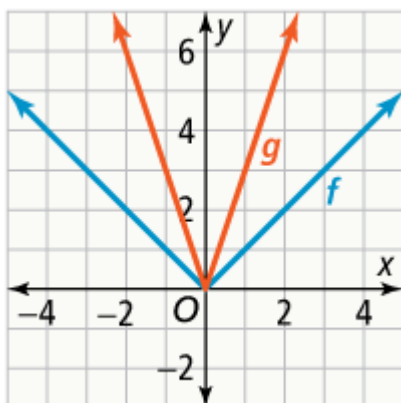


14.

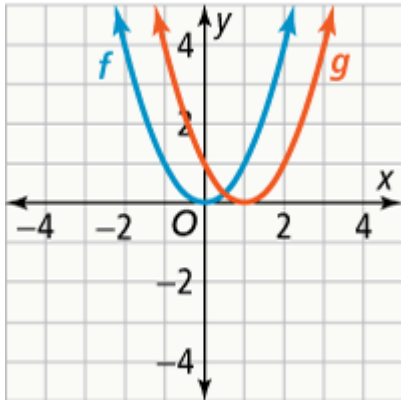


15. Let $f(x) = |x|$. When $k > 0$, $g(x) = kf(x)$ represents a vertical stretch of the absolute value function. For every x -value, each y -value of g is k times farther from the x -axis than the corresponding y -value for f . The function $h(x) = \left|\frac{1}{k}x\right|$ produces a horizontal stretch by a factor of k . For every y -value, each x -value of h is k times farther from the y -axis than the corresponding x -value for f .

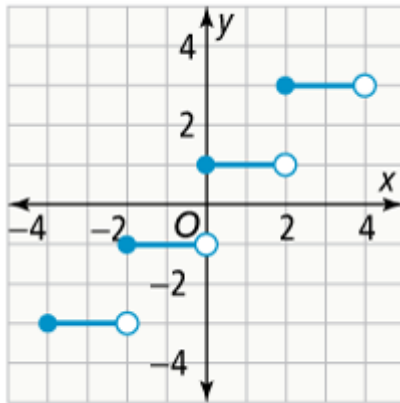
16.



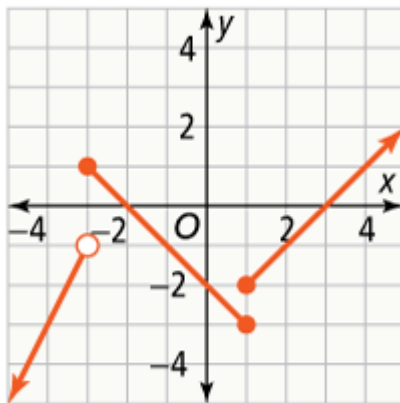
17.



18.



19.



20.

$$f(x) = \begin{cases} -\frac{3}{2}x - \frac{15}{2}, & \text{if } x < -3 \\ \frac{1}{5}x + \frac{8}{5}, & \text{if } -3 \leq x \leq 2 \\ 3, & \text{if } 2 < x \leq 5 \end{cases}$$

21. Yes; The graph of every absolute value function is composed of two branches, one of which is increasing and the other decreasing.

22.

$$C(n) = \begin{cases} 120n, & \text{when } 0 < n \leq 10 \\ 90n + 1,200, & \text{when } n > 10 \end{cases}; \$1,920$$

32.

$$x = -2 \text{ and } x = 1$$

33.

$$x = -11 \text{ and } x = 5$$

34. $(-\infty, -3)$ and $(1, \infty)$
35. $(-1, 8)$
36. No; Noninteger answers are not easily obtained from a graph. Sometimes you can only approximate the answer.
37. The car is ahead of the truck when $63x > 55x + 30$, or after 3.75 h.

