

Piecewise Functions and Transformations

Piecewise-defined functions, library functions, and graph transformations.

Name _____ Date _____

32 main 2-up grid 12 pages visible side quests

Completion Reward



Shown here as a small pack artifact, not a preview destination.

1. What does a piecewise function do?

input region	rule
$x < 0$	$2x$
$x \geq 0$	$x + 1$

A piecewise function uses different formulas on different input intervals, so the condition decides which rule applies.

- A. It always has two x-intercepts.
- B. It must be nonlinear.
- C. It uses different rules on different parts of the domain.
- D. It can never be graphed.

1.3. If $|x| = 5$, which could be x ?

- A. 5 only
- B. -5 only
- C. 5 or -5
- D. 0 only

2. What does $x \leq 2$ mean in a piecewise condition?

- A. The value $x = 2$ is excluded from that branch.
- B. The graph must cross the x-axis at 2.
- C. The value $x = 2$ is included in that branch.
- D. The function must be even.

2.3. If $|x| = 5$, which could be x ?

- A. 5 only
- B. -5 only
- C. 5 or -5
- D. 0 only

3. Which is the parent absolute-value function?

- A. $y = x^2$
- B. $y = \sqrt{x}$
- C. $y = |x|$
- D. $y = 1/x$

3.3. If $|x| = 5$, which could be x ?

- A. 5 only
- B. -5 only
- C. 5 or -5
- D. 0 only

1.1. What does $|x|$ represent?

- A. The distance of x from 0
- B. Always a negative number
- C. The opposite of x
- D. Only the positive values of x

1.4. A piecewise function uses different rules because:

- A. One formula cannot describe every interval
- B. It always has no graph
- C. Every piece must be linear
- D. It only works for negative x

2.1. What does $|x|$ represent?

- A. The distance of x from 0
- B. Always a negative number
- C. The opposite of x
- D. Only the positive values of x

2.4. A piecewise function uses different rules because:

- A. One formula cannot describe every interval
- B. It always has no graph
- C. Every piece must be linear
- D. It only works for negative x

3.1. What does $|x|$ represent?

- A. The distance of x from 0
- B. Always a negative number
- C. The opposite of x
- D. Only the positive values of x

3.4. A piecewise function uses different rules because:

- A. One formula cannot describe every interval
- B. It always has no graph
- C. Every piece must be linear
- D. It only works for negative x

1.2. What is $|-7|$?

- A. -7
- B. 7
- C. 0
- D. 14

1.5. If $f(x) = \{ x + 1 \text{ when } x < 0, 2x \text{ when } x \geq 0 \}$, what is $f(3)$?

- A. 4
- B. 6
- C. 3
- D. 2

2.2. What is $|-7|$?

- A. -7
- B. 7
- C. 0
- D. 14

2.5. If $f(x) = \{ x + 1 \text{ when } x < 0, 2x \text{ when } x \geq 0 \}$, what is $f(3)$?

- A. 4
- B. 6
- C. 3
- D. 2

3.2. What is $|-7|$?

- A. -7
- B. 7
- C. 0
- D. 14

3.5. If $f(x) = \{ x + 1 \text{ when } x < 0, 2x \text{ when } x \geq 0 \}$, what is $f(3)$?

- A. 4
- B. 6
- C. 3
- D. 2

4. Which is the parent square-root function?

- A. $y = x^2$
- B. $y = |x|$
- C. $y = x^3$
- D. $y = \sqrt{x}$

4.1. What does $|x|$ represent?

- A. The distance of x from 0
- B. Always a negative number
- C. The opposite of x
- D. Only the positive values of x

4.2. What is $|-7|$?

- A. -7
- B. 7
- C. 0
- D. 14

4.3. If $|x| = 5$, which could be x ?

- A. 5 only
- B. -5 only
- C. 5 or -5
- D. 0 only

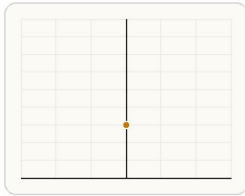
4.4. A piecewise function uses different rules because:

- A. One formula cannot describe every interval
- B. It always has no graph
- C. Every piece must be linear
- D. It only works for negative x

4.5. If $f(x) = \{ x + 1 \text{ when } x < 0, 2x \text{ when } x \geq 0 \}$, what is $f(3)$?

- A. 4
- B. 6
- C. 3
- D. 2

5. Compared to $y = x^2$, what does $y = x^2 + 3$ do?



Adding 3 outside the quadratic raises every output by 3 without changing the basic shape.

- A. Shifts the graph right 3 units
- B. Reflects the graph across the x -axis
- C. Shrinks the graph horizontally
- D. Shifts the graph up 3 units

5.1. What does $|x|$ represent?

- A. The distance of x from 0
- B. Always a negative number
- C. The opposite of x
- D. Only the positive values of x

5.2. What is $|-7|$?

- A. -7
- B. 7
- C. 0
- D. 14

5.3. If $|x| = 5$, which could be x ?

- A. 5 only
- B. -5 only
- C. 5 or -5
- D. 0 only

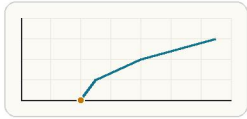
5.4. A piecewise function uses different rules because:

- A. One formula cannot describe every interval
- B. It always has no graph
- C. Every piece must be linear
- D. It only works for negative x

5.5. If $f(x) = \{ x + 1 \text{ when } x < 0, 2x \text{ when } x \geq 0 \}$, what is $f(3)$?

- A. 4
- B. 6
- C. 3
- D. 2

6. Compared to $y = \sqrt{x}$, what does $y = \sqrt{x - 4}$ do?



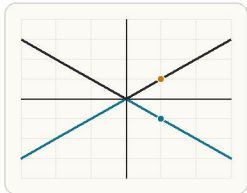
Replacing x with $x - 4$ moves the starting point and the whole square-root graph 4 units to the right.

- A. Shifts the graph left 4 units
- B. Shifts the graph up 4 units
- C. Reflects the graph across the y -axis
- D. Shifts the graph right 4 units

6.3. If $|x| = 5$, which could be x ?

- A. 5 only
- B. -5 only
- C. 5 or -5
- D. 0 only

7. Compared to $y = |x|$, what does $y = -|x|$ do?



A negative sign outside the absolute-value function flips every output value across the x -axis.

- A. Reflects the graph across the y -axis
- B. Shifts the graph down 1
- C. Shifts the graph right 1
- D. Reflects the graph across the x -axis

7.3. If $|x| = 5$, which could be x ?

- A. 5 only
- B. -5 only
- C. 5 or -5
- D. 0 only

6.1. What does $|x|$ represent?

- A. The distance of x from 0
- B. Always a negative number
- C. The opposite of x
- D. Only the positive values of x

6.4. A piecewise function uses different rules because:

- A. One formula cannot describe every interval
- B. It always has no graph
- C. Every piece must be linear
- D. It only works for negative x

7.1. What does $|x|$ represent?

- A. The distance of x from 0
- B. Always a negative number
- C. The opposite of x
- D. Only the positive values of x

7.4. A piecewise function uses different rules because:

- A. One formula cannot describe every interval
- B. It always has no graph
- C. Every piece must be linear
- D. It only works for negative x

6.2. What is $|-7|$?

- A. -7
- B. 7
- C. 0
- D. 14

6.5. If $f(x) = \{ x + 1$ when $x < 0$, $2x$ when $x \geq 0 \}$, what is $f(3)$?

- A. 4
- B. 6
- C. 3
- D. 2

7.2. What is $|-7|$?

- A. -7
- B. 7
- C. 0
- D. 14

7.5. If $f(x) = \{ x + 1$ when $x < 0$, $2x$ when $x \geq 0 \}$, what is $f(3)$?

- A. 4
- B. 6
- C. 3
- D. 2

8. Compared to $y = |x|$, what does $y = 2|x|$ do?

- A. It shifts the graph right 2.
- B. It reflects the graph across the y-axis.
- C. It doubles every output value.
- D. It halves every output value.

8.1. What does $|x|$ represent?

- A. The distance of x from 0
- B. Always a negative number
- C. The opposite of x
- D. Only the positive values of x

8.2. What is $|-7|$?

- A. -7
- B. 7
- C. 0
- D. 14

8.3. If $|x| = 5$, which could be x ?

- A. 5 only
- B. -5 only
- C. 5 or -5
- D. 0 only

8.4. A piecewise function uses different rules because:

- A. One formula cannot describe every interval
- B. It always has no graph
- C. Every piece must be linear
- D. It only works for negative x

8.5. If $f(x) = \{ x + 1$ when $x < 0$, $2x$ when $x \geq 0 \}$, what is $f(3)$?

- A. 4
- B. 6
- C. 3
- D. 2

9. Which expression shifts $y = x^2$ right 3 units?

- A. $y = (x - 3)^2$
- B. $y = (x + 3)^2$
- C. $y = x^2 + 3$
- D. $y = -x^2$

9.1. What does $|x|$ represent?

- A. The distance of x from 0
- B. Always a negative number
- C. The opposite of x
- D. Only the positive values of x

9.2. What is $|-7|$?

- A. -7
- B. 7
- C. 0
- D. 14

9.3. If $|x| = 5$, which could be x ?

- A. 5 only
- B. -5 only
- C. 5 or -5
- D. 0 only

9.4. A piecewise function uses different rules because:

- A. One formula cannot describe every interval
- B. It always has no graph
- C. Every piece must be linear
- D. It only works for negative x

9.5. If $f(x) = \{ x + 1$ when $x < 0$, $2x$ when $x \geq 0 \}$, what is $f(3)$?

- A. 4
- B. 6
- C. 3
- D. 2

10. Which expression shifts $y = x^2$ down 2 units?

- A. $y = x^2 - 2$
- B. $y = (x - 2)^2$
- C. $y = x^2 + 2$
- D. $y = -x^2 - 2$

10.1. What does $|x|$ represent?

- A. The distance of x from 0
- B. Always a negative number
- C. The opposite of x
- D. Only the positive values of x

10.2. What is $|-7|$?

- A. -7
- B. 7
- C. 0
- D. 14

10.3. If $|x| = 5$, which could be x ?

- A. 5 only
- B. -5 only
- C. 5 or -5
- D. 0 only

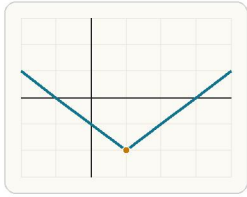
10.4. A piecewise function uses different rules because:

- A. One formula cannot describe every interval
- B. It always has no graph
- C. Every piece must be linear
- D. It only works for negative x

10.5. If $f(x) = \{ x + 1$ when $x < 0$, $2x$ when $x \geq 0 \}$, what is $f(3)$?

- A. 4
- B. 6
- C. 3
- D. 2

11. Which expression shifts $y = |x|$ right 1 and down 2?



A right 1 and down 2 shift moves the absolute-value vertex from $(0, 0)$ to $(1, -2)$.

- A. $y = |x + 1| - 2$
- B. $y = |x - 2| + 1$
- C. $y = -|x - 1| + 2$
- D. $y = |x - 1| - 2$

11.3. If $|x| = 5$, which could be x ?

- A. 5 only
- B. -5 only
- C. 5 or -5
- D. 0 only

12. Which expression reflects $y = \sqrt{x}$ across the x -axis?

- A. $y = \sqrt{-x}$
- B. $y = -\sqrt{x}$
- C. $y = \sqrt{x} - 1$
- D. $y = \sqrt{x + 1}$

12.3. If $|x| = 5$, which could be x ?

- A. 5 only
- B. -5 only
- C. 5 or -5
- D. 0 only

13. Which expression is a vertical stretch of $y = x^3$ by factor 4?

- A. $y = (4x)^3$
- B. $y = x^3 + 4$
- C. $y = 4x^3$
- D. $y = x^3 - 4$

13.3. If $|x| = 5$, which could be x ?

- A. 5 only
- B. -5 only
- C. 5 or -5
- D. 0 only

11.1. What does $|x|$ represent?

- A. The distance of x from 0
- B. Always a negative number
- C. The opposite of x
- D. Only the positive values of x

11.4. A piecewise function uses different rules because:

- A. One formula cannot describe every interval
- B. It always has no graph
- C. Every piece must be linear
- D. It only works for negative x

12.1. What does $|x|$ represent?

- A. The distance of x from 0
- B. Always a negative number
- C. The opposite of x
- D. Only the positive values of x

12.4. A piecewise function uses different rules because:

- A. One formula cannot describe every interval
- B. It always has no graph
- C. Every piece must be linear
- D. It only works for negative x

13.1. What does $|x|$ represent?

- A. The distance of x from 0
- B. Always a negative number
- C. The opposite of x
- D. Only the positive values of x

13.4. A piecewise function uses different rules because:

- A. One formula cannot describe every interval
- B. It always has no graph
- C. Every piece must be linear
- D. It only works for negative x

11.2. What is $|-7|$?

- A. -7
- B. 7
- C. 0
- D. 14

11.5. If $f(x) = \{ x + 1 \text{ when } x < 0, 2x \text{ when } x \geq 0 \}$, what is $f(3)$?

- A. 4
- B. 6
- C. 3
- D. 2

12.2. What is $|-7|$?

- A. -7
- B. 7
- C. 0
- D. 14

12.5. If $f(x) = \{ x + 1 \text{ when } x < 0, 2x \text{ when } x \geq 0 \}$, what is $f(3)$?

- A. 4
- B. 6
- C. 3
- D. 2

13.2. What is $|-7|$?

- A. -7
- B. 7
- C. 0
- D. 14

13.5. If $f(x) = \{ x + 1 \text{ when } x < 0, 2x \text{ when } x \geq 0 \}$, what is $f(3)$?

- A. 4
- B. 6
- C. 3
- D. 2

14. What is the best first step when evaluating a piecewise function?

- A. Add the formulas together first.
- B. Decide which interval contains the input.
- C. Assume the first branch is always used.
- D. Differentiate each branch.

14.3. If $|x| = 5$, which could be x ?

- A. 5 only
- B. -5 only
- C. 5 or -5
- D. 0 only

15. A student says $y = (x - 4)^2$ shifts $y = x^2$ up 4 units. What is the mistake?

- A. Subtracting inside shifts right, not up.
- B. The graph actually shifts down 4 units.
- C. The minus sign reflects the graph.
- D. Squaring removes the shift entirely.

15.3. If $|x| = 5$, which could be x ?

- A. 5 only
- B. -5 only
- C. 5 or -5
- D. 0 only

16. For $f(x) = 2x$ when $x < 0$ and $x + 1$ when $x \geq 0$, find $f(-3)$. Answer with a number.

- A. 5 only
- B. -5 only
- C. 5 or -5
- D. 0 only

16.3. If $|x| = 5$, which could be x ?

- A. 5 only
- B. -5 only
- C. 5 or -5
- D. 0 only

14.1. What does $|x|$ represent?

- A. The distance of x from 0
- B. Always a negative number
- C. The opposite of x
- D. Only the positive values of x

14.4. A piecewise function uses different rules because:

- A. One formula cannot describe every interval
- B. It always has no graph
- C. Every piece must be linear
- D. It only works for negative x

15.1. What does $|x|$ represent?

- A. The distance of x from 0
- B. Always a negative number
- C. The opposite of x
- D. Only the positive values of x

15.4. A piecewise function uses different rules because:

- A. One formula cannot describe every interval
- B. It always has no graph
- C. Every piece must be linear
- D. It only works for negative x

16.1. What does $|x|$ represent?

- A. The distance of x from 0
- B. Always a negative number
- C. The opposite of x
- D. Only the positive values of x

16.4. A piecewise function uses different rules because:

- A. One formula cannot describe every interval
- B. It always has no graph
- C. Every piece must be linear
- D. It only works for negative x

14.2. What is $|-7|$?

- A. -7
- B. 7
- C. 0
- D. 14

14.5. If $f(x) = \{ x + 1$ when $x < 0$, $2x$ when $x \geq 0 \}$, what is $f(3)$?

- A. 4
- B. 6
- C. 3
- D. 2

15.2. What is $|-7|$?

- A. -7
- B. 7
- C. 0
- D. 14

15.5. If $f(x) = \{ x + 1$ when $x < 0$, $2x$ when $x \geq 0 \}$, what is $f(3)$?

- A. 4
- B. 6
- C. 3
- D. 2

16.2. What is $|-7|$?

- A. -7
- B. 7
- C. 0
- D. 14

16.5. If $f(x) = \{ x + 1$ when $x < 0$, $2x$ when $x \geq 0 \}$, what is $f(3)$?

- A. 4
- B. 6
- C. 3
- D. 2

17. For $f(x) = 2x$ when $x < 0$ and $x + 1$ when $x \geq 0$, find $f(4)$. Answer with a number.

17.1. What does $|x|$ represent?

- A. The distance of x from 0
- B. Always a negative number
- C. The opposite of x
- D. Only the positive values of x

17.2. What is $|-7|$?

- A. -7
- B. 7
- C. 0
- D. 14

17.3. If $|x| = 5$, which could be x ?

- A. 5 only
- B. -5 only
- C. 5 or -5
- D. 0 only

17.4. A piecewise function uses different rules because:

- A. One formula cannot describe every interval
- B. It always has no graph
- C. Every piece must be linear
- D. It only works for negative x

17.5. If $f(x) = \{ x + 1$ when $x < 0$, $2x$ when $x \geq 0 \}$, what is $f(3)$?

- A. 4
- B. 6
- C. 3
- D. 2

18. For $g(x) = (x - 2)^2$, find $g(5)$. Answer with a number.

18.1. What does $|x|$ represent?

- A. The distance of x from 0
- B. Always a negative number
- C. The opposite of x
- D. Only the positive values of x

18.2. What is $|-7|$?

- A. -7
- B. 7
- C. 0
- D. 14

18.3. If $|x| = 5$, which could be x ?

- A. 5 only
- B. -5 only
- C. 5 or -5
- D. 0 only

18.4. A piecewise function uses different rules because:

- A. One formula cannot describe every interval
- B. It always has no graph
- C. Every piece must be linear
- D. It only works for negative x

18.5. If $f(x) = \{ x + 1$ when $x < 0$, $2x$ when $x \geq 0 \}$, what is $f(3)$?

- A. 4
- B. 6
- C. 3
- D. 2

19. For $h(x) = -|x| + 4$, find $h(-3)$. Answer with a number.

19.1. What does $|x|$ represent?

- A. The distance of x from 0
- B. Always a negative number
- C. The opposite of x
- D. Only the positive values of x

19.2. What is $|-7|$?

- A. -7
- B. 7
- C. 0
- D. 14

19.3. If $|x| = 5$, which could be x ?

- A. 5 only
- B. -5 only
- C. 5 or -5
- D. 0 only

19.4. A piecewise function uses different rules because:

- A. One formula cannot describe every interval
- B. It always has no graph
- C. Every piece must be linear
- D. It only works for negative x

19.5. If $f(x) = \{ x + 1$ when $x < 0$, $2x$ when $x \geq 0 \}$, what is $f(3)$?

- A. 4
- B. 6
- C. 3
- D. 2

20. For $p(x) = \sqrt{x - 1}$, find $p(10)$. Answer with a number.

20.1. What does $|x|$ represent?

- A. The distance of x from 0
- B. Always a negative number
- C. The opposite of x
- D. Only the positive values of x

20.2. What is $|-7|$?

- A. -7
- B. 7
- C. 0
- D. 14

20.3. If $|x| = 5$, which could be x ?

- A. 5 only
- B. -5 only
- C. 5 or -5
- D. 0 only

20.4. A piecewise function uses different rules because:

- A. One formula cannot describe every interval
- B. It always has no graph
- C. Every piece must be linear
- D. It only works for negative x

20.5. If $f(x) = \{ x + 1 \text{ when } x < 0, 2x \text{ when } x \geq 0 \}$, what is $f(3)$?

- A. 4
- B. 6
- C. 3
- D. 2

21. For $q(x) = 2|x| + 1$, find $q(-2)$. Answer with a number.

21.1. What does $|x|$ represent?

- A. The distance of x from 0
- B. Always a negative number
- C. The opposite of x
- D. Only the positive values of x

21.2. What is $|-7|$?

- A. -7
- B. 7
- C. 0
- D. 14

21.3. If $|x| = 5$, which could be x ?

- A. 5 only
- B. -5 only
- C. 5 or -5
- D. 0 only

21.4. A piecewise function uses different rules because:

- A. One formula cannot describe every interval
- B. It always has no graph
- C. Every piece must be linear
- D. It only works for negative x

21.5. If $f(x) = \{ x + 1 \text{ when } x < 0, 2x \text{ when } x \geq 0 \}$, what is $f(3)$?

- A. 4
- B. 6
- C. 3
- D. 2

22. For $r(x) = x - 2$ when $x \leq 1$ and $3x$ when $x > 1$, find $r(1)$. Answer with a number.

22.1. What does $|x|$ represent?

- A. The distance of x from 0
- B. Always a negative number
- C. The opposite of x
- D. Only the positive values of x

22.2. What is $|-7|$?

- A. -7
- B. 7
- C. 0
- D. 14

22.3. If $|x| = 5$, which could be x ?

- A. 5 only
- B. -5 only
- C. 5 or -5
- D. 0 only

22.4. A piecewise function uses different rules because:

- A. One formula cannot describe every interval
- B. It always has no graph
- C. Every piece must be linear
- D. It only works for negative x

22.5. If $f(x) = \{ x + 1 \text{ when } x < 0, 2x \text{ when } x \geq 0 \}$, what is $f(3)$?

- A. 4
- B. 6
- C. 3
- D. 2

23. For $s(x) = x^2$ when $x < 2$ and $x + 5$ when $x \geq 2$, find $s(2)$. Answer with a number.

23.1. What does $|x|$ represent?

- A. The distance of x from 0
- B. Always a negative number
- C. The opposite of x
- D. Only the positive values of x

23.2. What is $|-7|$?

- A. -7
- B. 7
- C. 0
- D. 14

23.3. If $|x| = 5$, which could be x ?

- A. 5 only
- B. -5 only
- C. 5 or -5
- D. 0 only

23.4. A piecewise function uses different rules because:

- A. One formula cannot describe every interval
- B. It always has no graph
- C. Every piece must be linear
- D. It only works for negative x

23.5. If $f(x) = \{ x + 1$ when $x < 0$, $2x$ when $x \geq 0 \}$, what is $f(3)$?

- A. 4
- B. 6
- C. 3
- D. 2

24. Which student correctly explains $y = -\sqrt{x} + 2$?

- A. Student A: reflect $y = \sqrt{x}$ across the x -axis, then shift up 2.
- B. Student B: shift right 2, then reflect across the y -axis.
- C. Student C: reflect across the y -axis, then shift down 2.
- D. Student D: square the graph, then move left 2.

24.1. What does $|x|$ represent?

- A. The distance of x from 0
- B. Always a negative number
- C. The opposite of x
- D. Only the positive values of x

24.2. What is $|-7|$?

- A. -7
- B. 7
- C. 0
- D. 14

24.3. If $|x| = 5$, which could be x ?

- A. 5 only
- B. -5 only
- C. 5 or -5
- D. 0 only

24.4. A piecewise function uses different rules because:

- A. One formula cannot describe every interval
- B. It always has no graph
- C. Every piece must be linear
- D. It only works for negative x

24.5. If $f(x) = \{ x + 1$ when $x < 0$, $2x$ when $x \geq 0 \}$, what is $f(3)$?

- A. 4
- B. 6
- C. 3
- D. 2

25. Write the function that shifts $y = x^2$ right 4 units. Answer as an equation.

25.1. What does $|x|$ represent?

- A. The distance of x from 0
- B. Always a negative number
- C. The opposite of x
- D. Only the positive values of x

25.2. What is $|-7|$?

- A. -7
- B. 7
- C. 0
- D. 14

25.3. If $|x| = 5$, which could be x ?

- A. 5 only
- B. -5 only
- C. 5 or -5
- D. 0 only

25.4. A piecewise function uses different rules because:

- A. One formula cannot describe every interval
- B. It always has no graph
- C. Every piece must be linear
- D. It only works for negative x

25.5. If $f(x) = \{ x + 1$ when $x < 0$, $2x$ when $x \geq 0 \}$, what is $f(3)$?

- A. 4
- B. 6
- C. 3
- D. 2

26. Write the function that shifts $y = x^2$ up 5 units. Answer as an equation.

26.1. What does $|x|$ represent?

- A. The distance of x from 0
- B. Always a negative number
- C. The opposite of x
- D. Only the positive values of x

26.2. What is $|-7|$?

- A. -7
- B. 7
- C. 0
- D. 14

26.3. If $|x| = 5$, which could be x ?

- A. 5 only
- B. -5 only
- C. 5 or -5
- D. 0 only

26.4. A piecewise function uses different rules because:

- A. One formula cannot describe every interval
- B. It always has no graph
- C. Every piece must be linear
- D. It only works for negative x

26.5. If $f(x) = \{ x + 1 \text{ when } x < 0, 2x \text{ when } x \geq 0 \}$, what is $f(3)$?

- A. 4
- B. 6
- C. 3
- D. 2

27. Write the function that reflects $y = |x|$ across the x -axis. Answer as an equation.

27.1. What does $|x|$ represent?

- A. The distance of x from 0
- B. Always a negative number
- C. The opposite of x
- D. Only the positive values of x

27.2. What is $|-7|$?

- A. -7
- B. 7
- C. 0
- D. 14

27.3. If $|x| = 5$, which could be x ?

- A. 5 only
- B. -5 only
- C. 5 or -5
- D. 0 only

27.4. A piecewise function uses different rules because:

- A. One formula cannot describe every interval
- B. It always has no graph
- C. Every piece must be linear
- D. It only works for negative x

27.5. If $f(x) = \{ x + 1 \text{ when } x < 0, 2x \text{ when } x \geq 0 \}$, what is $f(3)$?

- A. 4
- B. 6
- C. 3
- D. 2

28. Write the function that shifts $y = \sqrt{x}$ left 2 units. Answer as an equation.

28.1. What does $|x|$ represent?

- A. The distance of x from 0
- B. Always a negative number
- C. The opposite of x
- D. Only the positive values of x

28.2. What is $|-7|$?

- A. -7
- B. 7
- C. 0
- D. 14

28.3. If $|x| = 5$, which could be x ?

- A. 5 only
- B. -5 only
- C. 5 or -5
- D. 0 only

28.4. A piecewise function uses different rules because:

- A. One formula cannot describe every interval
- B. It always has no graph
- C. Every piece must be linear
- D. It only works for negative x

28.5. If $f(x) = \{ x + 1 \text{ when } x < 0, 2x \text{ when } x \geq 0 \}$, what is $f(3)$?

- A. 4
- B. 6
- C. 3
- D. 2

29. Write the function that stretches $y = |x|$ vertically by factor 3. Answer as an equation.

29.1. What does $|x|$ represent?

- A. The distance of x from 0
- B. Always a negative number
- C. The opposite of x
- D. Only the positive values of x

29.2. What is $|-7|$?

- A. -7
- B. 7
- C. 0
- D. 14

29.3. If $|x| = 5$, which could be x ?

- A. 5 only
- B. -5 only
- C. 5 or -5
- D. 0 only

29.4. A piecewise function uses different rules because:

- A. One formula cannot describe every interval
- B. It always has no graph
- C. Every piece must be linear
- D. It only works for negative x

29.5. If $f(x) = \{ x + 1 \text{ when } x < 0, 2x \text{ when } x \geq 0 \}$, what is $f(3)$?

- A. 4
- B. 6
- C. 3
- D. 2

30. Write the function that shifts $y = 1/x$ right 3 units. Answer as an equation.

30.1. What does $|x|$ represent?

- A. The distance of x from 0
- B. Always a negative number
- C. The opposite of x
- D. Only the positive values of x

30.2. What is $|-7|$?

- A. -7
- B. 7
- C. 0
- D. 14

30.3. If $|x| = 5$, which could be x ?

- A. 5 only
- B. -5 only
- C. 5 or -5
- D. 0 only

30.4. A piecewise function uses different rules because:

- A. One formula cannot describe every interval
- B. It always has no graph
- C. Every piece must be linear
- D. It only works for negative x

30.5. If $f(x) = \{ x + 1 \text{ when } x < 0, 2x \text{ when } x \geq 0 \}$, what is $f(3)$?

- A. 4
- B. 6
- C. 3
- D. 2

31. Write the function that shifts $y = |x|$ right 1 and down 2. Answer as an equation.

31.1. What does $|x|$ represent?

- A. The distance of x from 0
- B. Always a negative number
- C. The opposite of x
- D. Only the positive values of x

31.2. What is $|-7|$?

- A. -7
- B. 7
- C. 0
- D. 14

31.3. If $|x| = 5$, which could be x ?

- A. 5 only
- B. -5 only
- C. 5 or -5
- D. 0 only

31.4. A piecewise function uses different rules because:

- A. One formula cannot describe every interval
- B. It always has no graph
- C. Every piece must be linear
- D. It only works for negative x

31.5. If $f(x) = \{ x + 1 \text{ when } x < 0, 2x \text{ when } x \geq 0 \}$, what is $f(3)$?

- A. 4
- B. 6
- C. 3
- D. 2

32. Write a piecewise function with rule x for $x < 0$ and $x + 2$ for $x \geq 0$. Answer as a piecewise definition.

32.1. What does $|x|$ represent?

- A. The distance of x from 0
- B. Always a negative number
- C. The opposite of x
- D. Only the positive values of x

32.2. What is $|-7|$?

- A. -7
- B. 7
- C. 0
- D. 14

32.3. If $|x| = 5$, which could be x ?

- A. 5 only
- B. -5 only
- C. 5 or -5
- D. 0 only

32.4. A piecewise function uses different rules because:

- A. One formula cannot describe every interval
- B. It always has no graph
- C. Every piece must be linear
- D. It only works for negative x

32.5. If $f(x) = \{ x + 1$ when $x < 0$, $2x$ when $x \geq 0 \}$, what is $f(3)$?

- A. 4
- B. 6
- C. 3
- D. 2