

Precalculus - Transformations of Graphs - Quiz

Common Core F-BF.B.3, F-IF.C.7b · maths-pdf.fr/en/

Name: _____ Class: _____ Date: ____/____/____

Pick the best answer for 10 questions on transformations of functions. Each explanation names a common mistake, such as shifting the wrong way.

Precalculus · Common Core State Standards: **F-BF.B.3, F-IF.C.7b**

Questions

Question 1

How does the graph of $y = (x-5)^2$ compare with $y = x^2$?

- A. Shifted right 5
- B. Shifted left 5
- C. Shifted up 5
- D. Shifted down 5

Question 2

Which equation reflects $y = f(x)$ over the x -axis?

- A. $y = f(-x)$
- B. $y = -f(-x)$
- C. $y = f(x) - 1$
- D. $y = -f(x)$

Question 3

The point $(2,3)$ is on f . What point is on $y = f(x+1) - 2$?

- A. $(3,1)$
- B. $(1,1)$
- C. $(1,5)$
- D. $(3,5)$

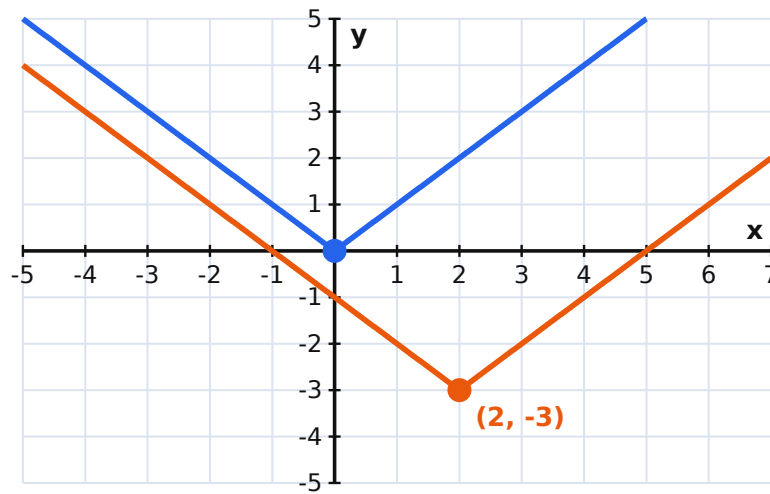
Question 4

Which describes $y = 3f(x)$?

- A. Horizontal stretch by 3
- B. Shift up 3
- C. Vertical stretch by 3
- D. Vertical compression by 3

Question 5

The graph shows a transformation of $y = |x|$. Which equation fits?



Orange graph with vertex (2, -3).

- A. $y = |x+2| - 3$
- B. $y = |x-2| - 3$
- C. $y = |x-2| + 3$
- D. $y = |x+2| + 3$

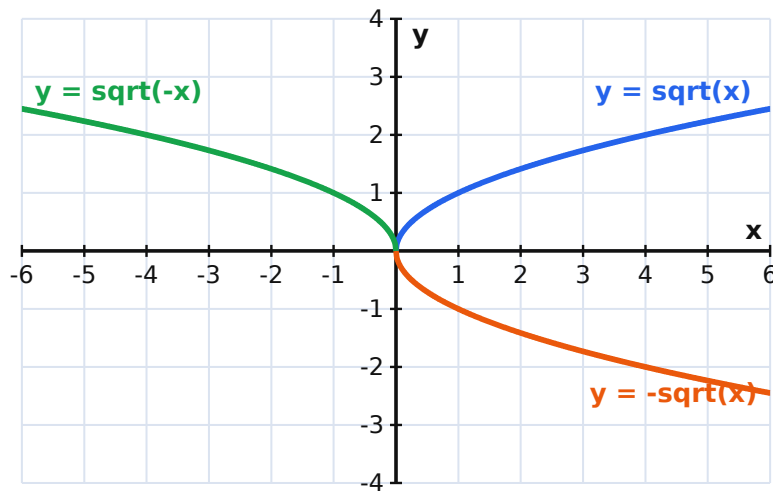
Question 6

Which function is even?

- A. $f(x) = x^3$
- B. $f(x) = x^2 + x$
- C. $f(x) = x^5 - x$
- D. $f(x) = x^4 + 1$

Question 7

Which graph is $y = \sqrt{-x}$?



Three square root graphs.

- A. The one in the left half-plane
- B. The one in the lower right
- C. The one in the upper right
- D. None of them

Question 8

What is the domain of $y = \sqrt{x+4}$?

- A. $[-4, \infty)$
- B. $[4, \infty)$
- C. $(-4, \infty)$
- D. $[0, \infty)$

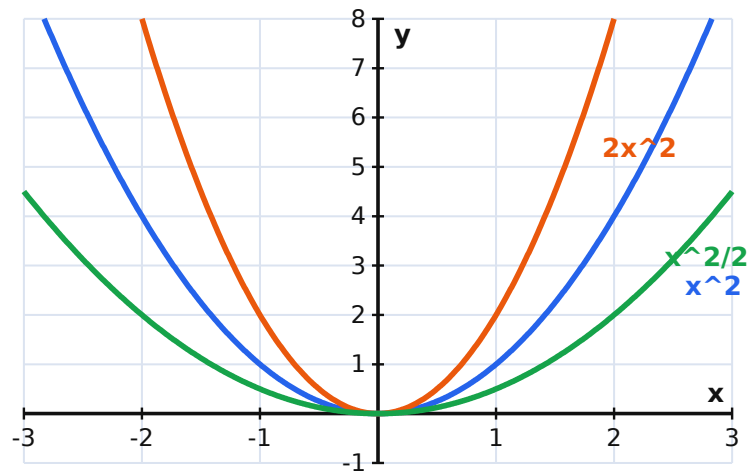
Question 9

The vertex of $y = -2(x+1)^2 + 5$ is...

- A. (1,5)
- B. (-1,5)
- C. (-1,-5)
- D. (1,-5)

Question 10

Compare $y = 2x^2$ with $y = x^2$.



Three parabolas.

- A. Wider
- B. Shifted up 2
- C. Narrower
- D. Reflected over the x-axis

Answers

1. **A** - The h in $(x - h)$ is 5, so the graph moves right. A minus inside moves right.
2. **D** - A negative outside the function flips the sign of every output.
3. **B** - $x + 1$ inside moves the graph left 1, so x becomes 1; the -2 moves y down to 1.
4. **C** - Multiplying outputs by 3 stretches the graph vertically by a factor of 3.
5. **B** - The vertex is $(2, -3)$: right 2 and down 3.
6. **D** - $x^4 + 1$ gives the same value for $-x$, so it is even.
7. **A** - Replacing x by $-x$ reflects over the y -axis, so the graph lies where $x \leq 0$.
8. **A** - $x + 4 \geq 0$ gives $x \geq -4$. The graph shifts left 4.
9. **B** - Read $(x - h)$ with $h = -1$ and $k = 5$. The sign on $x + 1$ is the opposite of h .
10. **C** - Multiplying by 2 doubles each height, making the parabola narrower.

Remember

- $f(x) + k$ shifts up k ; $f(x - h)$ shifts right h .
- $-f(x)$ reflects over the x -axis; $f(-x)$ reflects over the y -axis.
- $a f(x)$ stretches vertically by $|a|$; $f(bx)$ compresses horizontally by $1/|b|$.
- A point (p, q) on f becomes $(p + h, q + k)$ on $f(x - h) + k$.
- Even functions satisfy $f(-x) = f(x)$; odd functions satisfy $f(-x) = -f(x)$.