

Algebra 2 - Composition and Inverse Functions - Quiz

Common Core F-BF.A.1c, F-BF.B.4a · maths-pdf.fr/en/

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

Answer ten multiple-choice questions on composition and inverse functions. Choose one option for each question, then read the explanation to see why the correct choice works and which mistake, such as composing in the wrong order or forgetting to swap x and y , each wrong choice shows.

Algebra 2 · Common Core State Standards: **F-BF.A.1c, F-BF.B.4a**

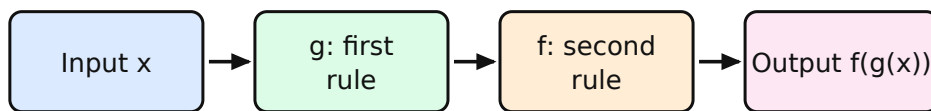
Questions

Question 1

If $f(x) = x + 1$ and $g(x) = 2x$, what is $f(g(3))$?

- A. 7
- B. 8
- C. 6
- D. 4

Question 2



Composition: g acts first, then f acts on the result.

In the diagram, which function acts first?

- A. f
- B. Both at the same time
- C. Neither
- D. g

Question 3

What is the inverse of $f(x) = x + 9$?

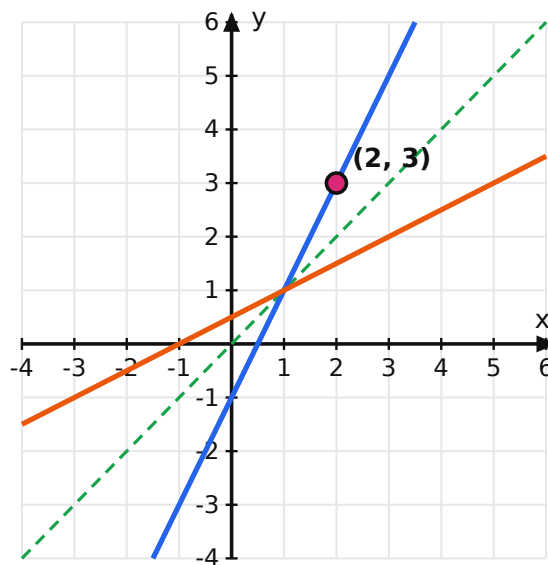
- A. $f^{-1}(x) = x + 9$
- B. $f^{-1}(x) = x - 9$
- C. $f^{-1}(x) = \frac{1}{x+9}$
- D. $f^{-1}(x) = 9 - x$

Question 4

A ride-share fare is $c = 4 + 3m$ dollars for m miles. Which formula gives the miles for a fare of c dollars?

- A. $m = 3c - 4$
- B. $m = \frac{c-4}{3}$
- C. $m = \frac{c}{3} - 4$
- D. $m = \frac{c+4}{3}$

Question 5



Graph of f and f^{-1} .

The point $(2, 3)$ is on f . Which point is on the graph of the inverse?

- A. $(3, 2)$
- B. $(2, -3)$
- C. $(-2, 3)$
- D. $(3, 3)$

Question 6

Which function has an inverse over all real numbers?

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

Question 7

How can you verify that g is the inverse of f ?

- A. Check that $f(x) = g(x)$
- B. Check that $f(g(x)) = x$ and $g(f(x)) = x$
- C. Check that $f(x) + g(x) = 0$
- D. Check that $f(x) \cdot g(x) = 1$

Question 8

x	1	2	3
f(x)	4	7	10

Values of f.

What is $f^{-1}(7)$?

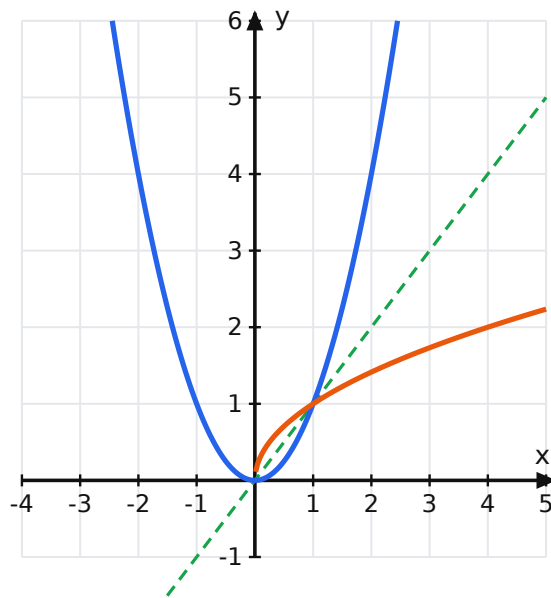
- A. 2
- B. 7
- C. 3
- D. 4

Question 9

The inverse of $f(x) = x^2 + 2$ for $x \geq 0$ is

- A. $f^{-1}(x) = \sqrt{x} - 2$
- B. $f^{-1}(x) = \sqrt{x + 2}$
- C. $f^{-1}(x) = \sqrt{x - 2}$
- D. $f^{-1}(x) = x^2 - 2$

Question 10



The parabola $y = x^2$.

Why does $y = x^2$ have no inverse function on all real numbers?

- A. It is not continuous
- B. Its graph does not pass through the origin
- C. A horizontal line meets it twice, so it is not one-to-one
- D. Its domain is restricted

Answers

1. **A** - $g(3) = 6$, then $f(6) = 7$. Applying f first gives $g(f(3)) = 8$.
2. **D** - In $f(g(x))$, the inner function g is applied to x first.
3. **B** - To undo adding 9, subtract 9.
4. **B** - Solve for m : subtract 4, then divide by 3. This is the inverse of the fare function.
Dividing before subtracting gives $c/3 - 4$, which is wrong.
5. **A** - An inverse swaps the coordinates, so $(2, 3)$ becomes $(3, 2)$.
6. **D** - Only x^3 is one-to-one. The others give the same output for x and $-x$.
7. **B** - Inverse functions undo each other, so both compositions give x .
8. **A** - $f(2) = 7$, so the inverse sends 7 back to 2.
9. **C** - $x = y^2 + 2$ gives $y^2 = x - 2$, and $y = \sqrt{x - 2}$ for the restricted domain.
10. **C** - Two inputs such as 2 and -2 give the same output, so the function fails the horizontal line test.

Remember

- $f(g(x))$: apply g first, then f .
- Composition order matters.
- Inverse: swap x and y , then solve for y .
- $f(f^{-1}(x)) = x$ and $f^{-1}(f(x)) = x$.
- Graphs of f and f^{-1} are mirror images over $y = x$.