

Algebra 2 · Function Operations, Composition and Inverses · Test

Common Core F-BF.A.1b, F-BF.A.1c, F-BF.B.4a · mathovore.fr

Name: _____ Date: ____/____/____ Score: _____

This algebra 2 inverse functions test checks function operations, composition and inverses in 45 minutes, with 9 questions for a total of 20 points.

This test covers Algebra 2 function operations, composition, and inverse functions (F-BF.A.1b, F-BF.A.1c, F-BF.B.4a). Nine questions are worth 20 points in total. Show every step and write final answers in simplest form. A calculator is not needed.

Test information

- **Grade:** Algebra 2
- **Chapter:** Function Operations, Composition and Inverses
- **Common Core:** F-BF.A.1b, F-BF.A.1c, F-BF.B.4a
- **Time:** 45 minutes
- **Total:** 20 points (Question 1: 2 pts; Question 2: 2 pts; Question 3: 2 pts; Question 4: 2 pts; Question 5: 2 pts; Question 6: 2 pts; Question 7: 3 pts; Question 8: 3 pts; Question 9: 2 pts)

Algebra 2 Inverse Functions Test: questions 1-5

Question 1: Operations on functions (2 points)

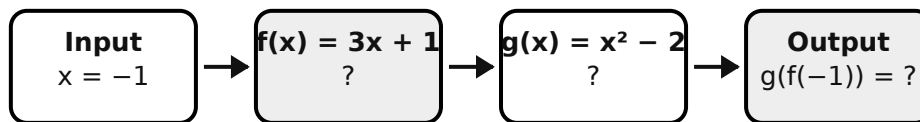
Let $f(x) = x^2 - 3x$ and $g(x) = 2x + 5$.

- $(f+g)(x)$ in simplest form (1 point)
- $(fg)(2)$ (1 point)

Question 2: Evaluate compositions (2 points)

Let $f(x) = 3x + 1$ and $g(x) = x^2 - 2$.

- $f(g(3))$ (1 point)
- $g(f(-1))$, using the machine below (1 point)



Machine for part (b).

Question 3: Composite and its domain (2 points)

Let $f(x) = \frac{2}{x}$ and $g(x) = x - 3$.

- Write $f(g(x))$. (1 point)
- State the domain of $f(g(x))$. (1 point)

Question 4: Find an inverse (2 points)

Find the inverse function of $f(x) = \frac{5x-1}{2}$.

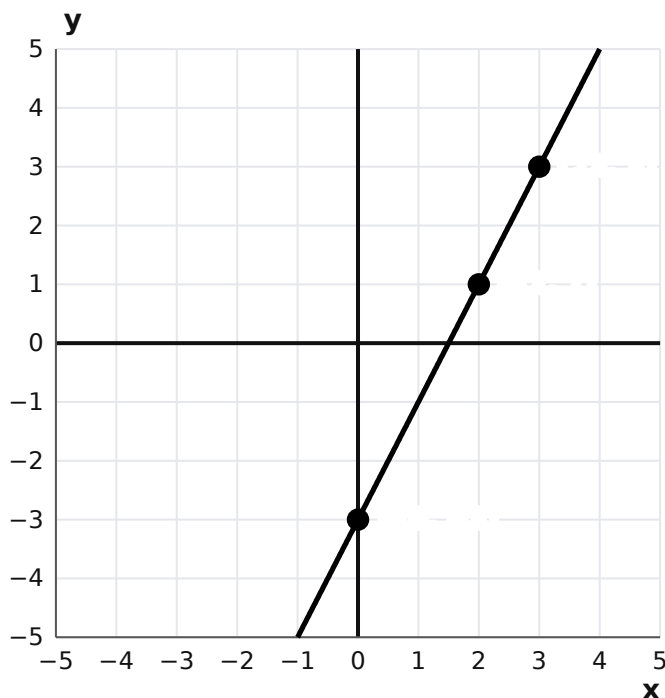
Question 5: Verify inverse functions (2 points)

Show that $f(x) = \frac{x}{3} + 4$ and $g(x) = 3x - 12$ are inverse functions.

Algebra 2 Inverse Functions Test: questions 6-9

Question 6: Inverse from a graph (2 points)

The graph of the linear function f is shown with three points.

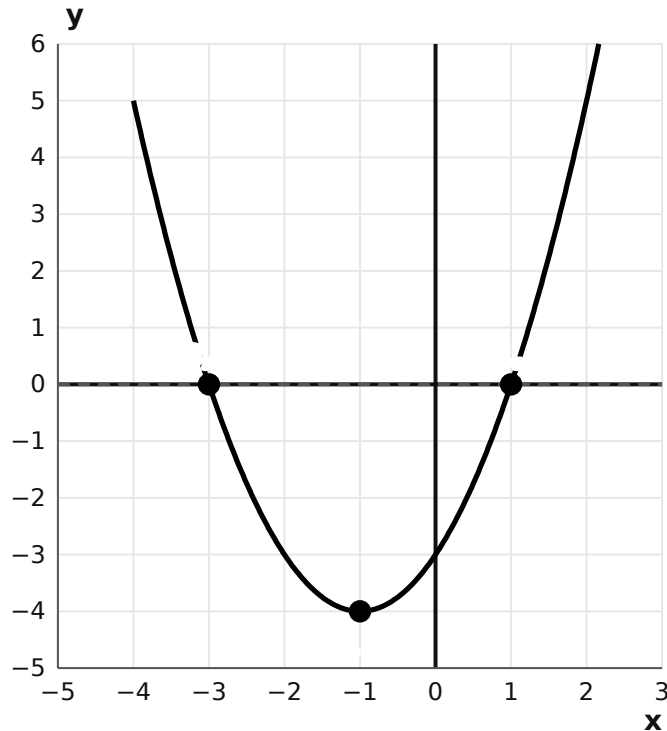


The graph of f .

- Give the coordinates of the corresponding points on the graph of f^{-1} . (1 point)
- Write a formula for $f^{-1}(x)$. (1 point)

Question 7: Restrict the domain (3 points)

The graph of $f(x) = (x+1)^2 - 4$ is shown.



The graph of f .

- Explain why f has no inverse function on all real numbers. (1 point)
- Restrict the domain so that f has an inverse and find $f^{-1}(x)$. (1 point)
- State the domain and range of f^{-1} . (1 point)

Question 8: Taxi fare inverse (3 points)

A taxi fare is $F(m) = 2.50 + 1.75m$ dollars for a ride of m miles.

- Find the inverse function. (1 point)
- Use it to find how many miles Liam rode when his fare was \$20. (1 point)
- Explain what the inverse function represents. (1 point)

Question 9: Growing circle (2 points)

The radius of a circular ripple is $r(t) = 4t$ inches after t seconds, and its area is $A(r) = \pi r^2$.

- Write $A(r(t))$ in simplest form. (1 point)
- Find the area after 3 seconds in terms of π . (1 point)

How to use this algebra 2 inverse functions test

Take this algebra 2 inverse functions test without notes, then grade it with the test answer key out of 20 points.

