

Precalculus · Functions: Domain, Range, Composition and Inverses · Test

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

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

This precalculus functions review test checks functions: domain, range, composition and inverses in 45 minutes, with 9 questions for a total of 20 points.

This test covers domain, composition, decomposition, inverse functions and restricted domains. It has 9 questions worth 20 points. Allow 45 minutes, write interval notation where asked, and show your work for full credit. Calculators are not needed.

Test information

- **Grade:** Precalculus
- **Chapter:** Functions: Domain, Range, Composition and Inverses
- **Common Core:** F-IF.A.1, F-BF.A.1c, F-BF.B.4b, F-BF.B.4c, F-BF.B.4d
- **Time:** 45 minutes
- **Total:** 20 points (Question 1: 2 pts; Question 2: 2 pts; Question 3: 2 pts; Question 4: 2 pts; Question 5: 3 pts; Question 6: 3 pts; Question 7: 3 pts; Question 8: 2 pts; Question 9: 1 pt)

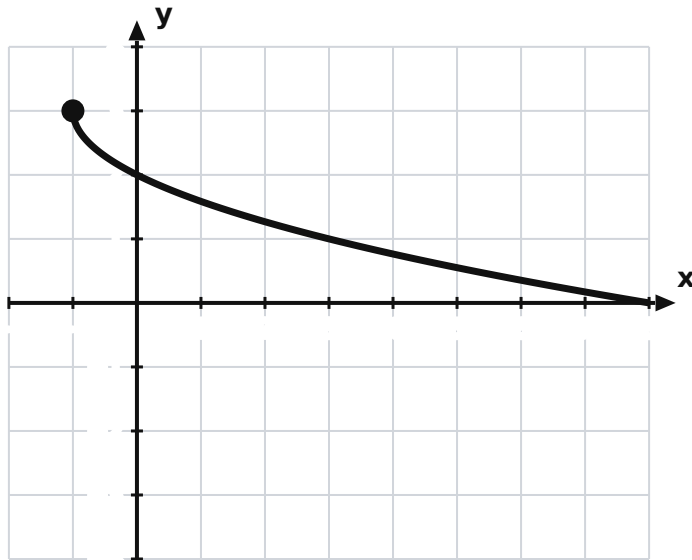
Precalculus Functions Review Test: questions 1-5

Question 1: Domain in interval notation (2 points)

- a. $f(x) = \sqrt{3x-12}$ (1 point)
- b. $g(x) = \frac{x}{x^2-x-6}$ (1 point)

Question 2: Domain and range from a graph (2 points)

The graph shows a function f that starts at the point $(-1, 3)$.



Graph of the function.

- State the domain of f . (1 point)
- State the range of f . (1 point)

Question 3: Composition of functions (2 points)

Let $f(x) = x^2 - 3x$ and $g(x) = x + 4$.

- Write and simplify $f(g(x))$. (1 point)
- Evaluate $g(f(2))$. (1 point)

Question 4: Decompose and find a domain (2 points)

Let $h(x) = \sqrt{x^2 - 16}$.

- Write $f(x)$ and $g(x)$ so that $h(x) = f(g(x))$ and neither is x . (1 point)
- State the domain of h in interval notation. (1 point)

Question 5: Find and verify an inverse (3 points)

Let $f(x) = \frac{3x-2}{x+1}$.

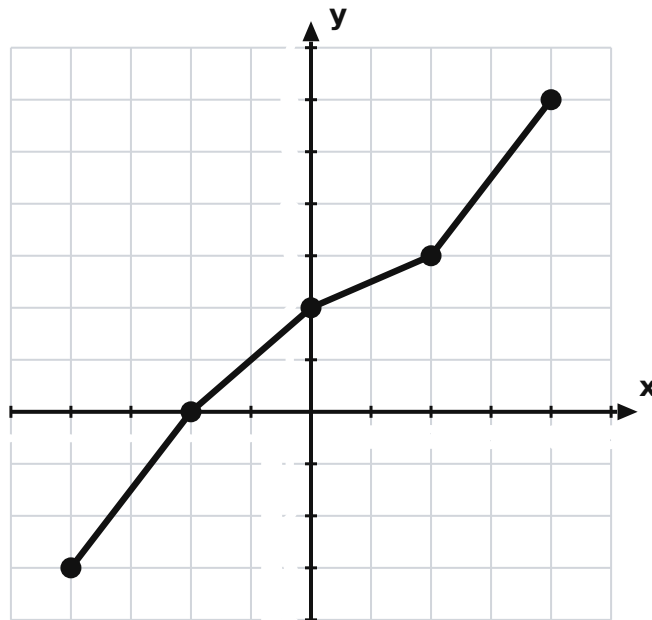
- Find $f^{-1}(x)$. (2 points)
- Show that $f^{-1}(f(x)) = x$. (1 point)

Precalculus Functions Review Test: questions 6-9

Question 6: Inverse values from a graph (3 points)

The graph shows a one-to-one function f through the points $(-4, -3)$, $(-2, 0)$, $(0, 2)$, $(2, 3)$ and

(4,6).

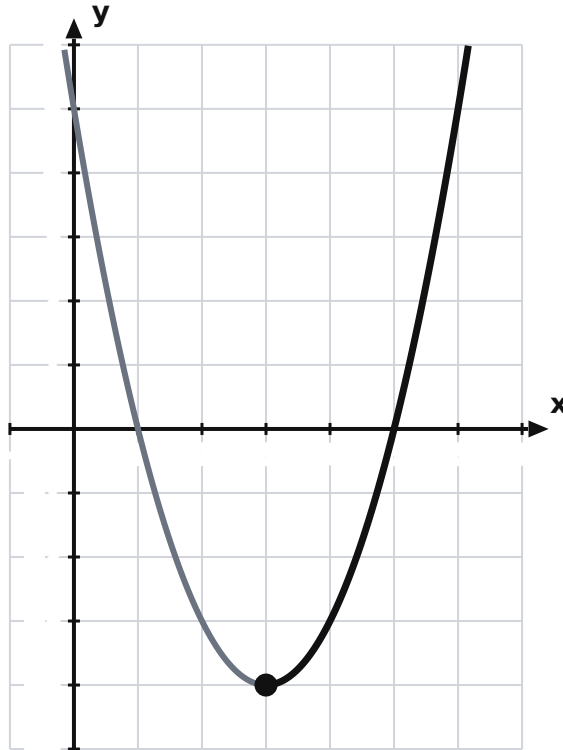


Graph of f .

- a. Find $f^{-1}(2)$. (1 point)
- b. Find $f^{-1}(6)$. (1 point)
- c. State the domain and range of f^{-1} . (1 point)

Question 7: Restrict a domain (3 points)

Let $f(x) = x^2 - 6x + 5$, shown below.



Graph of $f(x) = x^2 - 6x + 5$.

- Explain why f has no inverse function as given. (1 point)
- Restrict the domain to $x \geq 3$ and find $f^{-1}(x)$ with its domain. (2 points)

Question 8: Temperature inverse (2 points)

The function $C(F) = \frac{5}{9}(F - 32)$ converts degrees Fahrenheit to degrees Celsius.

- Find $F(C)$, the inverse function. (1 point)
- A freezer is set to -15°C . Find the Fahrenheit temperature. (1 point)

Question 9: Find an unknown function (1 point)

Let $g(x) = 3x - 5$ and $f(g(x)) = 6x - 7$. Find $f(x)$.

How to use this precalculus functions review test

Take this precalculus functions review test without notes, then grade it with the test answer key out of 20 points.

