

Precalculus - Inverse Functions - Test

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

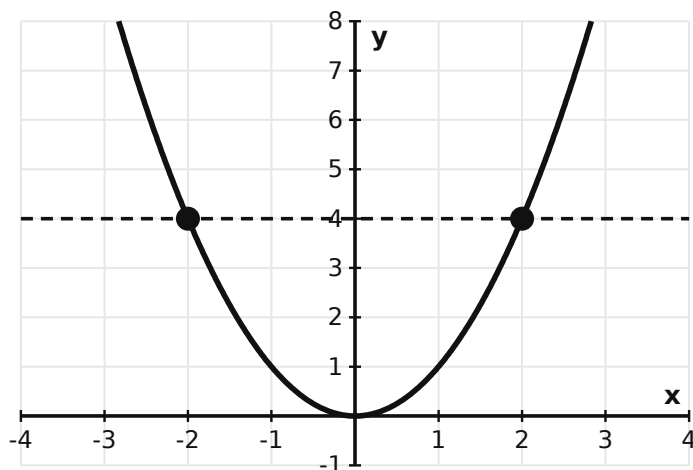
Name: _____ Class: _____ Date: ____/____/____

This 20-point test checks inverse functions: horizontal line test, algebraic inverses, verification and a modeling problem (F-BF.B.4). You have 45 minutes. Show every step.

About this test

- Grade: Precalculus
- Chapter: Inverse Functions
- Standards: F-BF.B.4a, F-BF.B.4b, F-BF.B.4c, F-BF.B.4d
- Time: 45 minutes
- Total: 20 points

Question 1 - Horizontal line test [2 pts]



Graph of $y = x^2$ and the line $y = 4$.

Does the graph represent a one-to-one function? Explain using the horizontal line test.

Question 2 - Inverse of a line [2 pts]

Find $f^{-1}(x)$ if $f(x) = \frac{2x-5}{3}$.

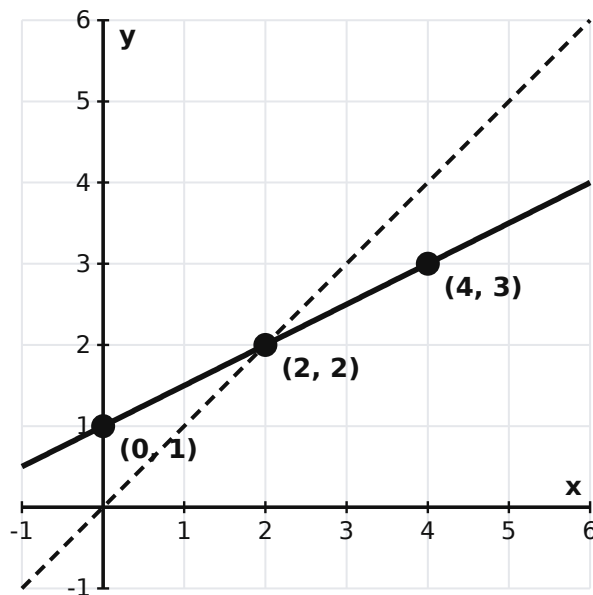
Question 3 - Inverse of a root function [2 pts]

Find $f^{-1}(x)$ for $f(x) = \sqrt{x+3}$ and state its domain.

Question 4 - Verify inverses [2 pts]

Show that $f(x) = 5x - 2$ and $g(x) = \frac{x+2}{5}$ are inverses.

Question 5 - Points on an inverse [3 pts]



Graph of f with three points.

(a) List the coordinates of three points on f^{-1} . (b) Find $f^{-1}(x)$ for $f(x) = \frac{x}{2} + 1$. (c) Explain how the graphs of f and f^{-1} are related.

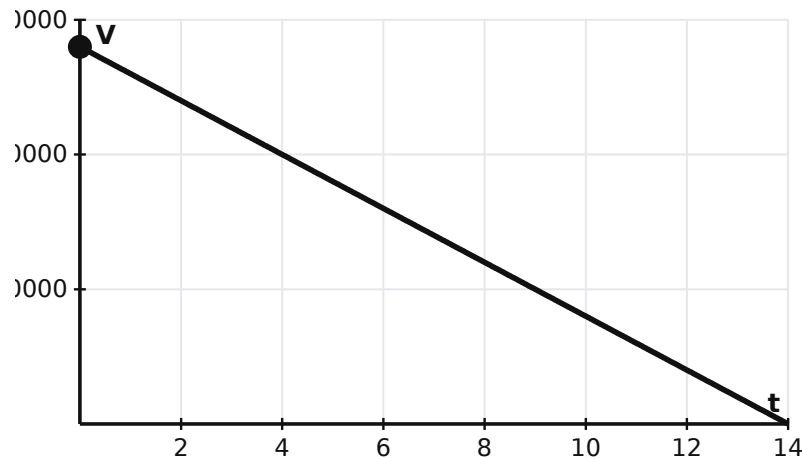
Question 6 - Rational inverse [2 pts]

Find $f^{-1}(x)$ for $f(x) = \frac{x+1}{x-2}$.

Question 7 - Restricted domain [2 pts]

Restrict $f(x) = (x+1)^2 - 4$ to $x \geq -1$ and find $f^{-1}(x)$.

Question 8 - Car value model [3 pts]



Sofia's car loses value steadily.

The value of Sofia's car is $V(t) = 28,000 - 2,000t$ dollars after t years. (a) Find V^{-1} . (b) Use it to find when the value is \$17,000. (c) State what V^{-1} represents.

Question 9 - Domain and range of an inverse [2 pts]

Let $f(x) = \sqrt{x-5} + 2$. Find $f^{-1}(x)$ and state its domain.