

AP Precalculus
Finding Inverse Functions

Finding Inverse Functions | APPC-U02-P14

96 problems · Four activity formats

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Topic focus

Across 96 tasks this topic asks for eighth-root inverse and domain, inverse and bounded domain, inverse and domain, inverse and finite domain, inverse branch rules and intervals and inverse branches with open images.

8 PDFs and a README; 80 buyer pages.

AP Precalculus

Finding Inverse Functions

Name: _____ Date: _____ Class: _____

Answer each question and show your reasoning in the workspace. Give exact values rather than decimals unless the question supplies a decimal. A value without its unit is not a complete answer.

Reverse the finite mapping and evaluate the requested inverse value.
Required output: inverse table and $f^{-1}(8)$

Input	Output
-2	5
0	1
3	8

AP Precalculus

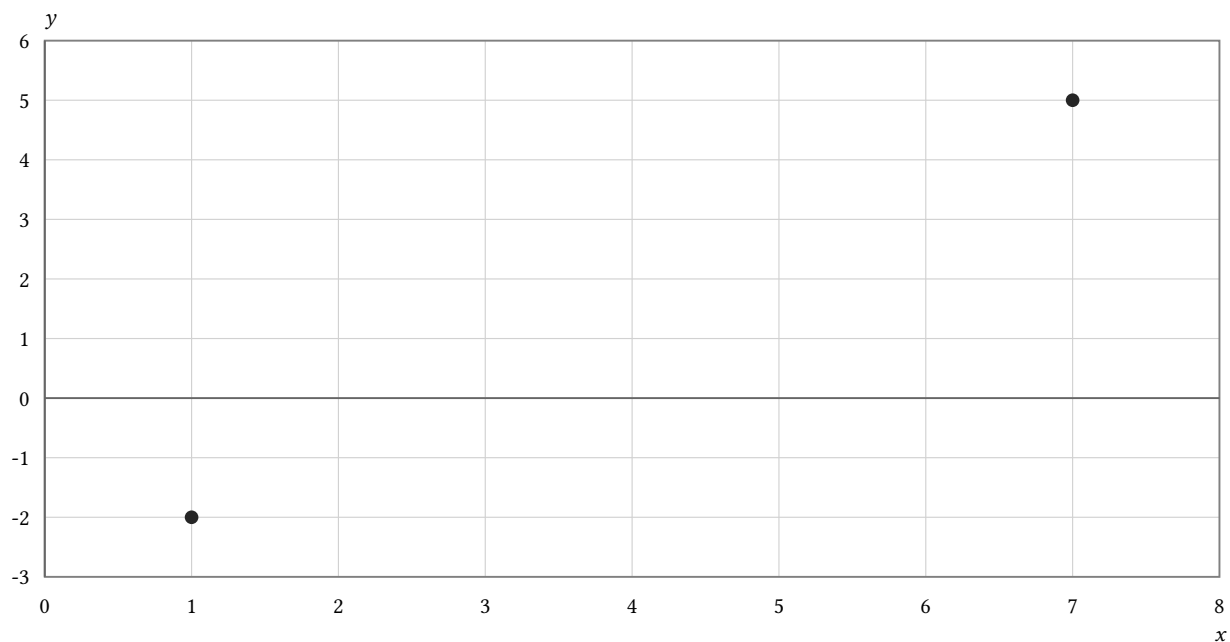
Finding Inverse Functions

Name: _____ Date: _____ Class: _____

Begin at START. Answer the card, then find the matching final answer at the top of another card. Use the recording sheet for your reasoning. Visit each card once and continue to FINISH.

START

Identify the two endpoints of the reflected inverse curve.



Your response: _____

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Evaluate the supplied statement or method. Say whether it is correct, repair it if it is not, and verify the result exactly. Not every prompt contains an error.

Construct the inverse of the decreasing odd-power chain. A student proposes $\sqrt[5]{x} - 2 - 7$. Locate the first incorrect inverse operation and repair the rule.

Domain: all real numbers

Given rule: $p(x) = 7 - (x + 2)^5$

Solve for the inverse and state its excluded input and output values. A student keeps $x \neq -\frac{5}{2}$ as the inverse input exclusion. Diagnose the interchange of domain and range.

Domain: x is not $-\frac{5}{2}$

Given rule: $f(x) = \frac{3x-2}{2x+5}$

Write the inverse pieces in increasing order of their new input intervals. A student reverses the formulas but keeps the original input intervals on the inverse pieces. Identify and repair the interval error.

Domain: $[-3, 0]$ union $[2, 6)$

Given rule: $f(x) = 4 - x$ for $-3 \leq x \leq 0$; $f(x) = 3x + 8$ for $2 \leq x < 6$

Construct the inverse of the decreasing radical branch and retain its exact range. A student gives $9 - x^2$ as the inverse on every real input. Explain why the algebraic expression alone is insufficient.

Domain: $0 \leq x \leq 9$

Given rule: $r(x) = \sqrt{9 - x}$

Finding Inverse Functions

Full Worked Solutions - excerpt

Worked example

Problem. Reverse the root and translations in their operational order.

Domain: all real numbers

Given rule: $h(x) = \sqrt[3]{x-4} + 2$

Answer. $h^{-1}(x) = (x-2)^3 + 4$.

Explanation and check.

Subtract 2, cube, and then add 4.

Worked example

Problem. Recover both inverse intercepts and one additional reflected point.

Domain: an invertible interval

Given facts: [" $f(0) = 9$ ", " $f(-4) = 0$ ", " $f(2) = 13$ "]

Answer. The inverse x -intercept is 9, its y -intercept is -4 , and it contains $(13, 2)$.

Explanation and check.

Reflect $(0, 9)$, $(-4, 0)$, and $(2, 13)$.