Cornell Notes

Name: Adriana Lopez | Date: 9/29/11

Topic: Inverse Functions | Class/Subject: Algebra II per. 1 Bonn

7:50 Fermat 6-4

$\sqrt[3]{y-1^3} = \sqrt[3]{32}$

$y-1 = \sqrt[3]{32}$

$y-1 = \sqrt[3]{8}\sqrt[3]{4}$

$y+1 = 2\sqrt[3]{4}+1$

$y = 1+2\sqrt[3]{4}$

8:00 review Quiz

Solve:

A) $2x^4 = 34$ $\quad x = \pm\sqrt[4]{17}$

B) $(y-1)^3 = 32$

④ $27^{\frac{4}{3}} = (3^3)^{\frac{4}{3}} = 3^4 = 81$

⑥ $-64^{\frac{2}{3}} = -(4^3)^{\frac{2}{3}} = -(4)^2 = -16$

⑦ $\frac{\sqrt[4]{16}}{\sqrt[4]{3}} = \frac{2}{\sqrt[4]{3}}\left(\frac{\sqrt[4]{3^3}}{\sqrt[4]{3^3}}\right) = \frac{2\sqrt[4]{27}}{3}$

⑤ $32^{-3/5} = (2^5)^{-\frac{3}{5}} = \frac{2^{-3}}{1} = \frac{1}{2^3} = \frac{1}{8}$

⑩ $\left(\frac{12^{\frac{1}{3}}}{4^{\frac{1}{3}}}\right)^2 = \left[\left(\frac{12}{4}\right)^{\frac{1}{3}}\right]^2 = \left(3^{\frac{1}{3}}\right)^2 = 3^{\frac{2}{3}}$

⑫ $\sqrt[3]{(x+1)^3} = \sqrt[3]{18}$ → $x = -1+\sqrt[3]{18}$

$x+1 = \sqrt[3]{18}$

$-1 \quad -1$

8:10 Lesson: Inverse Functions

$f(x) = \frac{x-3}{2}$ $\quad g(x) = 2x+3$

Find inverse using Algebra →

Using Composition:

Find $F(g(x))$

- these two func. are inverses

.

Step 1: solve the function for the independant variable (x).

Step 2: Determine if you have a unique solution. →

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Name	Date
Topic Inv. Func. continued	Class/ Suject

Practice:

*$y = 2x - 4$

① solve for x
② unique solution?
③ switch x & y
④ rewrite as inv.

*$f(x) = 2x^2 - 4$

$y = 2x^2 - 4$

$\frac{y+4}{2} = \frac{2x^2}{2}$

$\sqrt{\frac{y+4}{2}} = \sqrt{x^2}$

*$y = \frac{1}{2}x^3 - 2$

$2(y+2) = (\frac{1}{2}x^3)2$

$\sqrt[3]{2y+4} = \sqrt[3]{x^3}$

$x = \sqrt[3]{2y+4}$

If the solution is unique, the inverse will be a function.
(if solution is unique then inverse IS a function.)

Step 3: Now switch x & y to write inverse.

Step 4: Denote the inverse as y^{-1} or $f^{-1}(x)$

① $\frac{y+4}{2} = \frac{2x}{2}$ $\quad x = \frac{y+4}{2}$

② unique - inv. is func.

③ $y = \frac{x+4}{2}$

④ $y^{-1} = \frac{x+4}{2}$ means inverse of original

① $x = \pm\sqrt{\frac{y+4}{2}}$ ② not unique (+ & -)

• inverse is not function

③ $y = \pm\sqrt{\frac{x+4}{2}}$ ④ $f^{-1}(x) = \pm\sqrt{\frac{x+4}{2}}$ inverse

① $x = \sqrt[3]{2y+4}$

② unique - inverse is func.

③ $y = \sqrt[3]{2x+4}$

④ $y^{-1} = \sqrt[3]{2x+4}$

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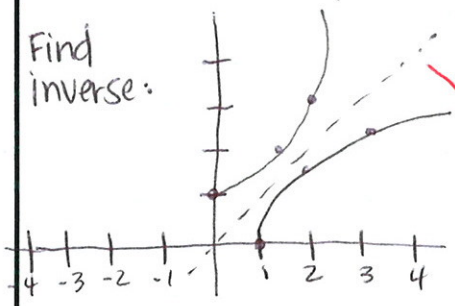
Determine inv. from graph

Find inverse:



- we use a vertical line to determine if we have a func.
- We can use a horizontal line to determine if the inverse is a func.

Find Inverse:

- imaginary line
- you can find the inverse by drawing the imaginary line.
- To draw the inverse, count spaces between imaginary line & original line. Then move the same amount of spaces in the opposite direction, plot point, connect points & you have the inverse!

$f(x)=2x-4 \quad g(x)=3x^2-7$

$\left(\frac{f}{g}\right)(x)=\frac{2x-4}{3x^2-7}; x\neq\pm\frac{\sqrt{21}}{3}$

$3x^2-7=0$
$+7 \quad +7$
$\frac{3x^2}{3}=\frac{7}{3}$
$\sqrt{x^2}=\sqrt{\frac{7}{3}}$

$x=\pm\frac{\sqrt{7}}{\sqrt{3}}\cdot\frac{\sqrt{3}}{\sqrt{3}} \quad x=\pm\frac{\sqrt{21}}{3}$

Homework (6-4) pg. 426-428 #14, 15, 17-23 odd, 33-35, 43-47 odd

Homework ✓ tomorrow

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