Trig 3.4

whiteboards
Quiz 3.3-3.4 tomorrow

Determine inverses of relations and functions
Graphs functions and their inverses

Inverse Relations	Two relations are inverse relations if and only if one relation contains the element (b, a) whenever the other relation contains the element (a, b).

domain ↖
range ↘

line of symmetry (y=x)

inverse function/ inverse relation

vertical line test (VLT) function?

horizontal line test (HLT) inv. function?

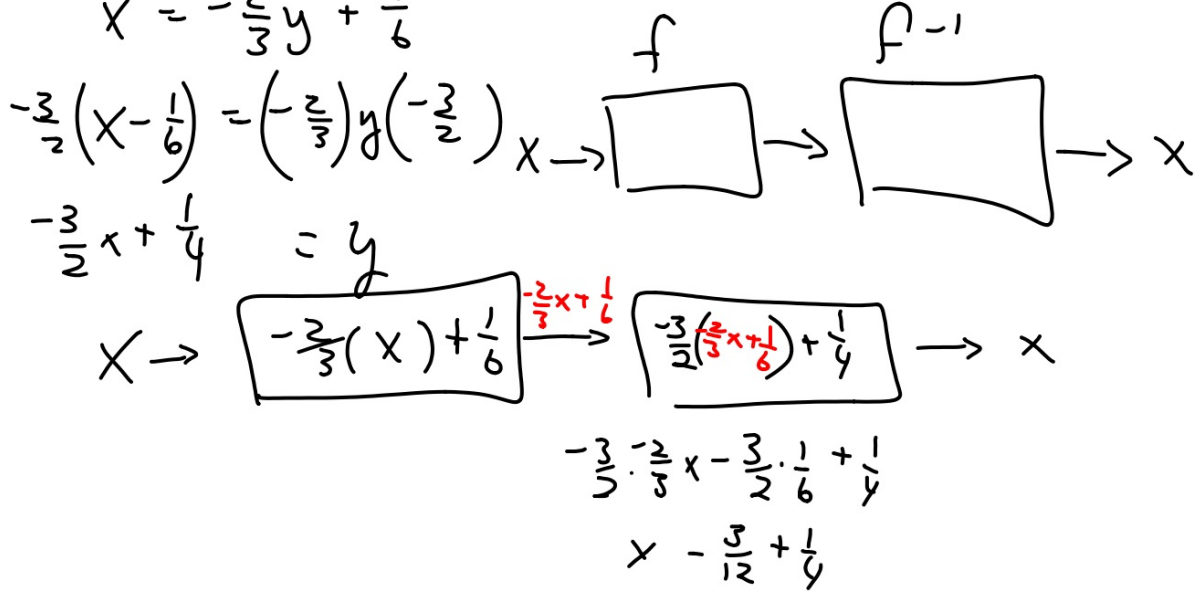
39. $f(x) = -\frac{2}{3}x + \frac{1}{6}$ $\qquad f^{-1}(x) = \frac{-3}{2}x + \frac{1}{4}$

$y = -\frac{2}{3}x + \frac{1}{6}$

$x = -\frac{2}{3}y + \frac{1}{6}$

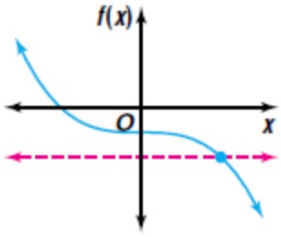
$-\frac{3}{2}\left(x - \frac{1}{6}\right) = \left(-\frac{2}{3}\right)y\left(-\frac{3}{2}\right)$

$-\frac{3}{2}x + \frac{1}{4} = y$

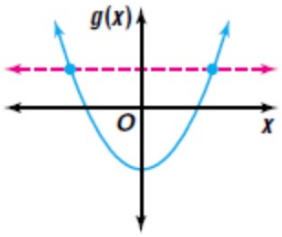


$-\frac{3}{2} \cdot -\frac{2}{3}x - \frac{3}{2} \cdot \frac{1}{6} + \frac{1}{4}$

$x - \frac{3}{12} + \frac{1}{4}$



The inverse of f(x) is a function.



The inverse of g(x) is not a function.

whiteboards

Lesson 3-4 *(Pages 152–158)*

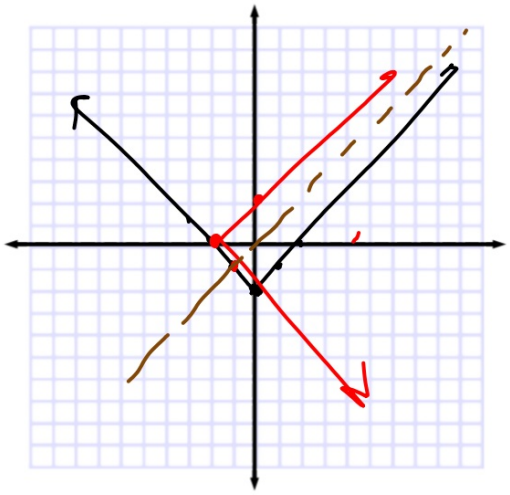
Graph each function and its inverse.

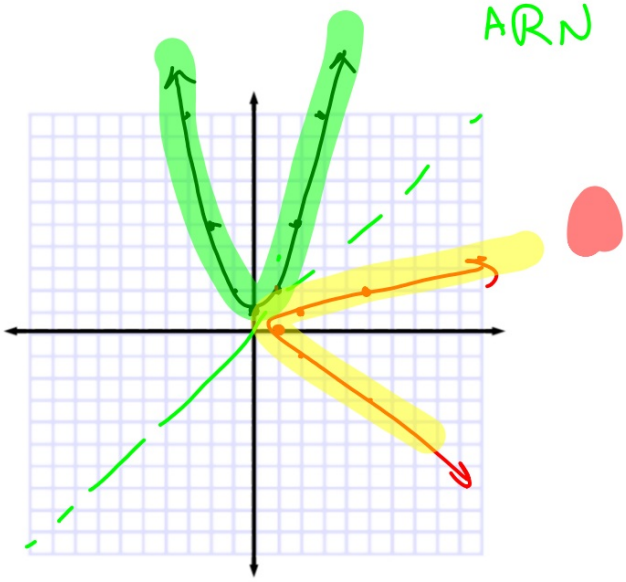
1. $f(x) = |x| - 2$

2. $f(x) = x^2 + 1$

ARN
$y \geq 1$

$x \geq 1$
ARN





Equation

VLT, HLT

Find $f^{-1}(x)$. Then state whether $f^{-1}(x)$ is a function.

4. $f(x) = 4x - 5$

5. $f(x) = -2x + 2$

$y = 4x - 5$

$x = 4y - 5$

$\frac{x+5}{4} = \frac{4y}{4}$

$\frac{1}{4}(\quad)$

$y = \frac{1}{4}x + \frac{5}{4}$

$f(x) = -4x^2 + 1$

$y = -4x^2 + 1$

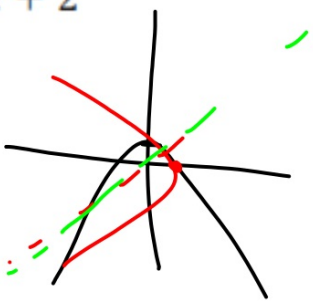
$x = -4y^2 + 1$

$\frac{x-1}{-4} = \frac{-4y^2}{-4}$

$\sqrt{-\frac{1}{4}x + \frac{1}{4}} = \sqrt{y^2}$

$\pm\sqrt{-\frac{1}{4}x + \frac{1}{4}}$

$\frac{1}{4}(\quad)$



7. $f(x) = (x - 2)^2$

8. $f(x) = -\frac{x}{2}$

7. $y = 2 + \sqrt[5]{x+2}$

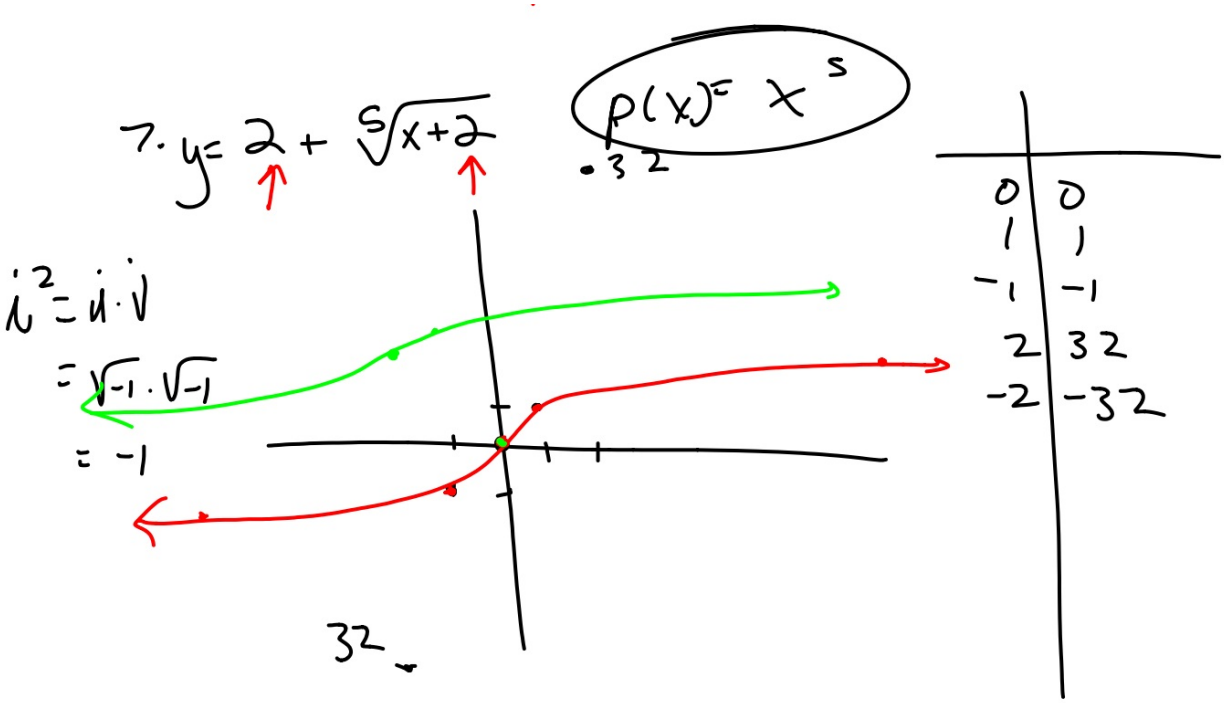
$p(x) = x^5$

$i^2 = i \cdot i$

$= \sqrt{-1} \cdot \sqrt{-1}$

$= -1$

0	0
1	1
-1	-1
2	32
-2	-32



$h = \frac{1}{2}gt^2$

$h = \frac{1}{2} \cdot 32 \cdot t^2$

$h = 16t^2$

$\sqrt{\frac{h}{16}} \quad \frac{\sqrt{h}}{4}$ 1024

WB 3,4

(p. 151)

10. $f(x) = x^2 + 8x - 2$

11. $f(x) = x^3 + 4$