HAT

Inverse Relations and Functions

10/27/17

What are examples of inverse operations?

powers & roots addition & subtraction mult & division

EX #1: Given $y = x + 3$, find the inverse equation?

$y = x - 3$

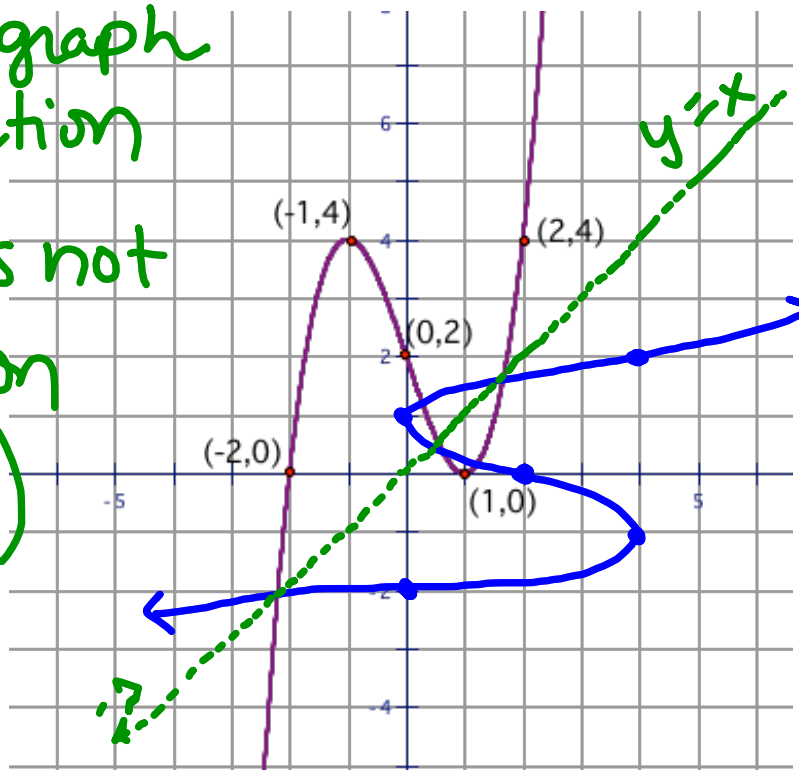
EX #2: Find the inverse equation of $y = \frac{x}{5}$

$y = 5x$

EX #3: Graph the inverse. Interchange x & y values

original graph is a function

Inverse is not a function (Relation)



Graph of the inverse

Is the original graph a function?

Yes

Is the inverse graph a function?

NO

If the original function passes the horizontal line test, then the inverse is a function (passes VLT)

Functions that pass the horiz. line test are called one to one functions. Exactly 1 x value for each y value.

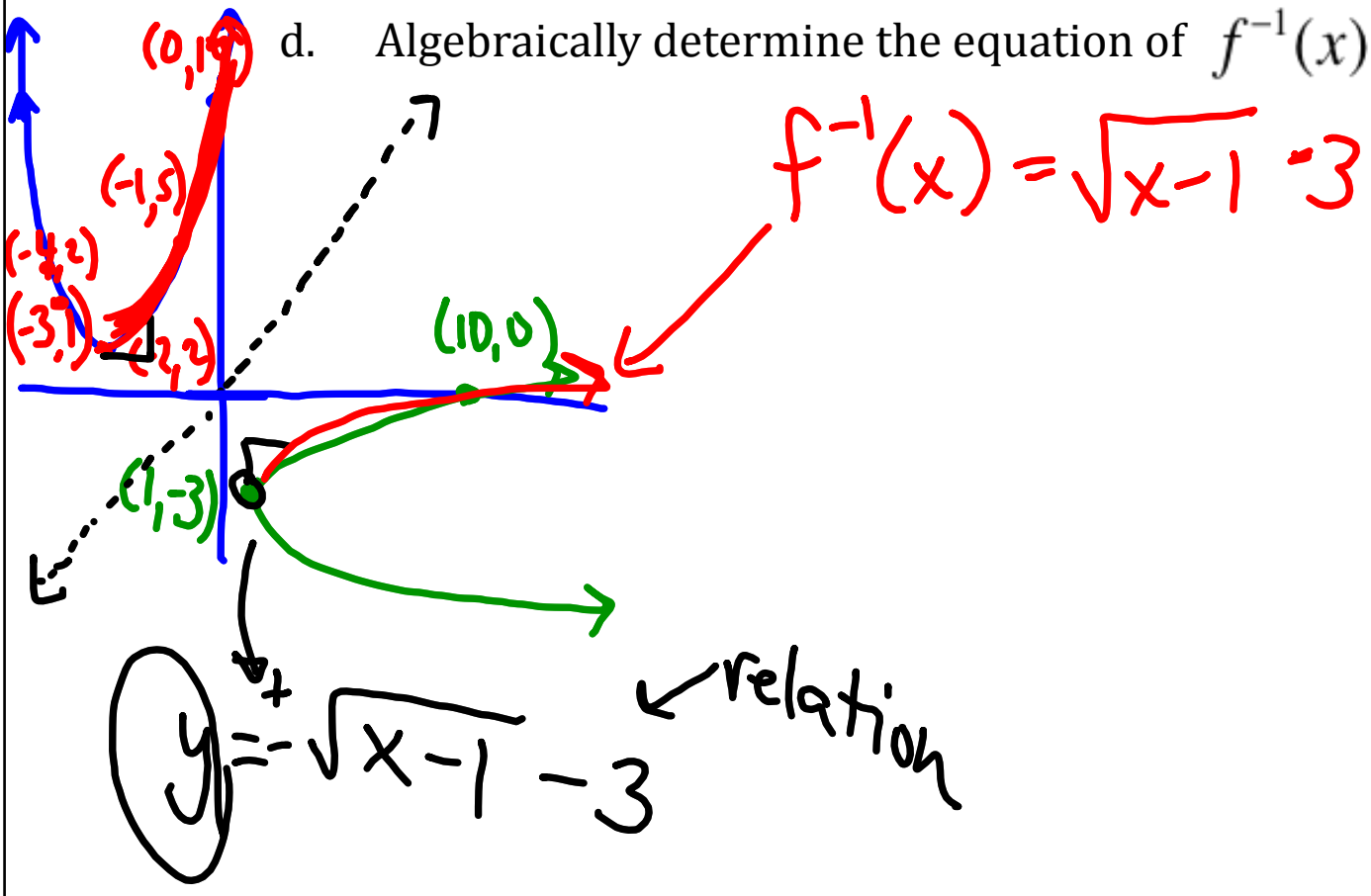
EX #4: a. Graph $f(x) = (x+3)^2 + 1$, $x \geq -3$

b. Graph $f^{-1}(x)$ ← The inverse function

c. Write the equation of $f^{-1}(x)$

Restrict the domain

d. Algebraically determine the equation of $f^{-1}(x)$



EX #5: Using the equations from Ex#4...

Find $\left(f \circ f^{-1}\right)(x)$ and $\left(f^{-1} \circ f\right)(x)$

Assignment:

page 396 #18, 22, 25, 26, 32, 35, 36, 49, 53, 56