5c $\quad g(x) = x^2 + 3 \qquad h(x) = x - 4$

5a) $(g \circ h)(x) = g(h(x))$

$= g(x-4) = (x-4)^2 + 3$

$= (x-4)(x-4) + 3$

$= x^2 - 8x + 16 + 3$

$= x^2 - 8x + 19$

b) $(h \circ g)(x) = h(g(x))$

$h(x^2+3) = (x^2+3) - 4$

$= x^2 - 1$

<u>Solve</u>

$(g \circ h)(x) = (h \circ g)(x)$

$\cancel{x^2} - 8x + 19 = \cancel{x^2} - 1$

$-8x + 19 = -1$

$-8x = -20$

$x = \frac{20}{8}$ or $\frac{5}{2}$


spacebunny 173
boy
opposite x and y
maybe switching x and y
x and y switch
a function thats reversed
use y for x
reflection over y equalsx
best
notation
bad
in terms of x
its a mirrored version
inversely functional
reflected
different
opposite
probably math
is
follow
switching
negative
switch x with y
flipped
my
x
something about functions
opposites of parent
zoro
notation is different
i dont even know
x to the negative power
opposites
the x and the y switch
inverse notation
flip x y coordinates
reverses another function
death of me
tbh i cant even remember
twitter
inverse that functions
plugging in x and y
negativr
axis
reciprocal

1.5 Inverse Functions

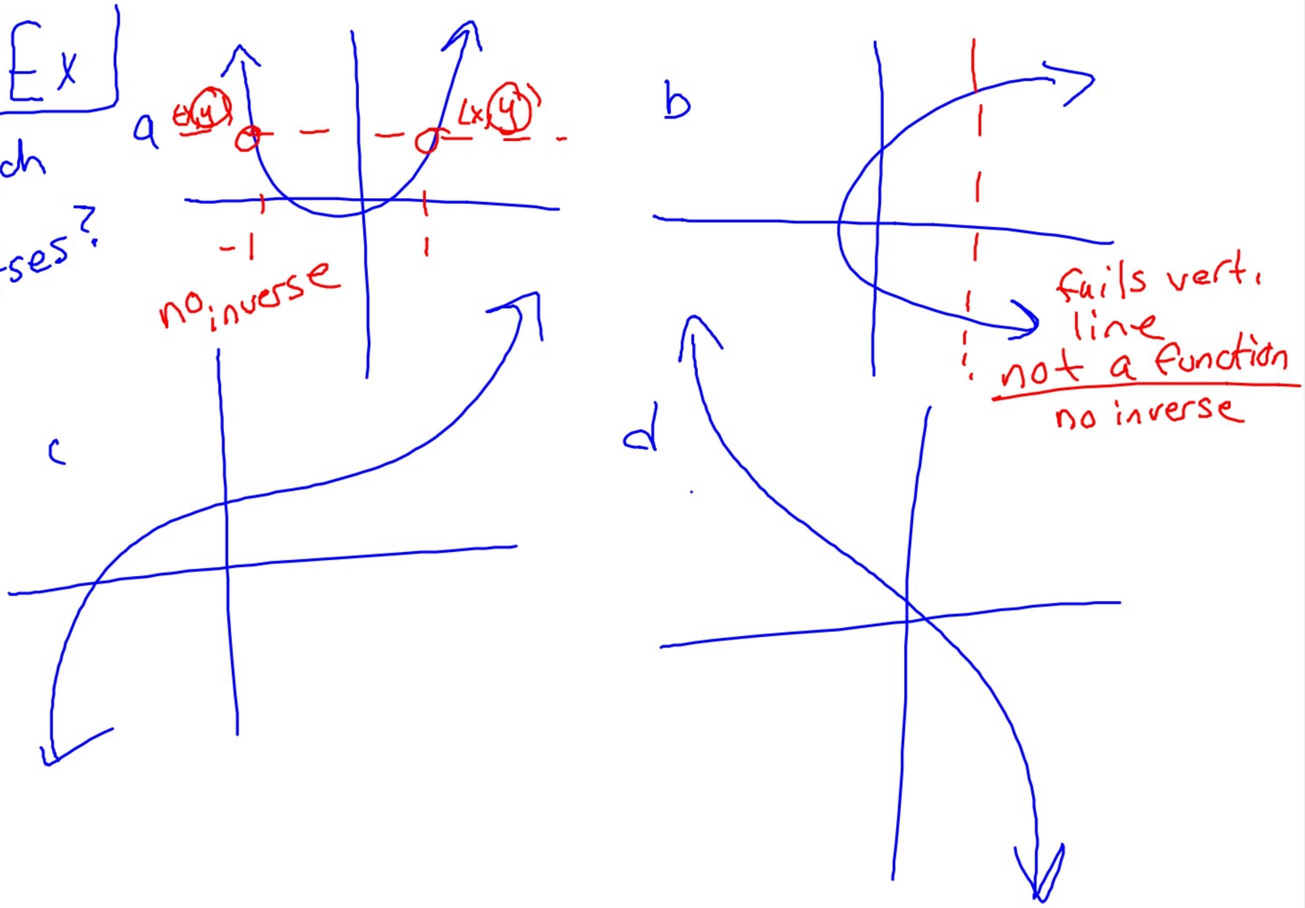
def) The inverse of a function $f(x)$ is $f^{-1}(x)$. It reverses the action of $f(x)$

* In order to have an inverse, a relation must 1st be a function (1x maps to 1y) and
vertical line test

one-to-one (every y has 1 x)
horizontal line test

Ex

which have inverses?



Function $f(x)$ and $g(x)$ are inverses of one another if:

$$(f \circ g)(x) = x \quad \text{for all } x \text{ in the domain}$$

and $$(g \circ f)(x) = x \quad \text{for all } x \text{ in the domain}$$

Finding Inverses Algebraically

$$f(x) = 3x - 2$$

action for f

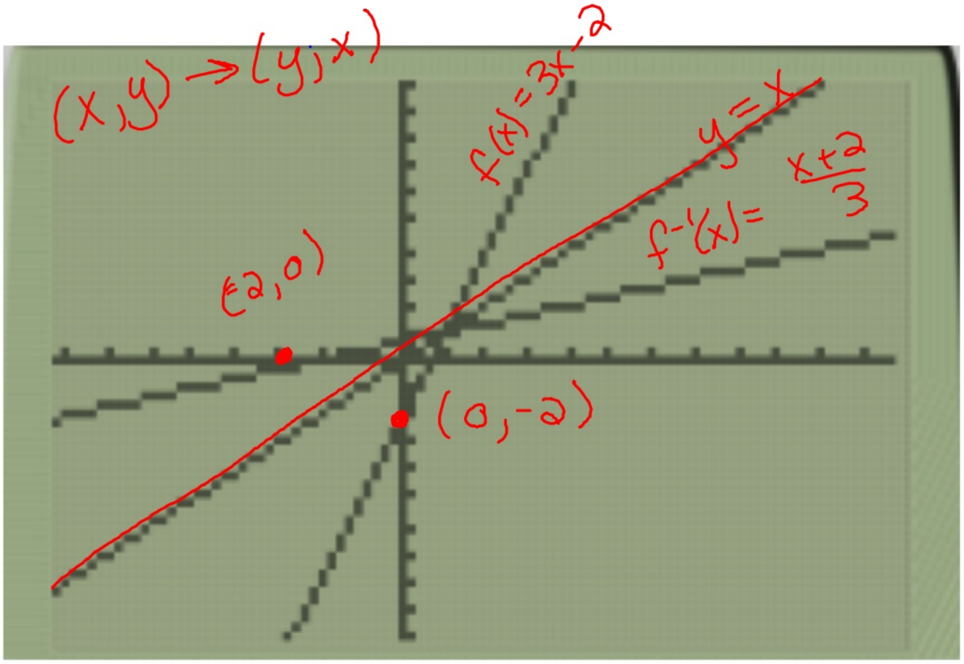
$$x \longrightarrow \cdot 3 \longrightarrow -2 \longrightarrow 3x-2$$

$$f^{-1}(x) = \frac{x+2}{3} \qquad \longleftarrow \div 3 \longleftarrow +2 \longleftarrow 3x-2$$

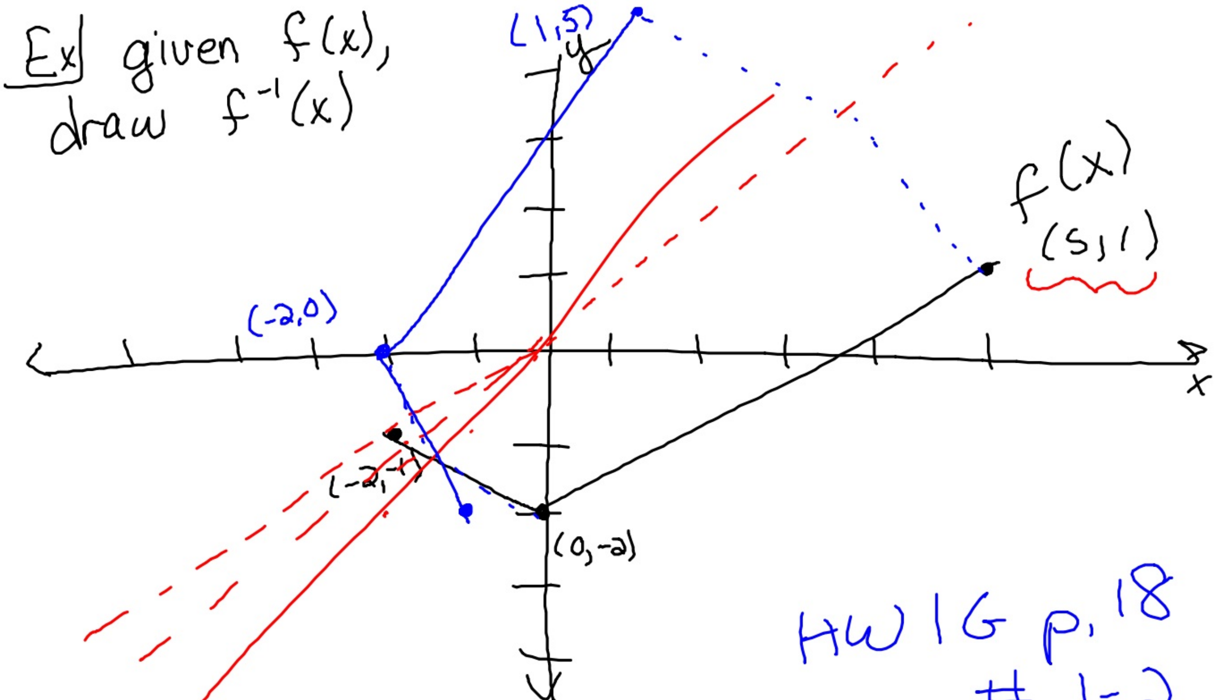
$$(f \circ f^{-1})(x) = \_\_\_\_ \qquad f(f^{-1}(x)) = \cancel{3}\left(\frac{x+2}{\cancel{3}}\right) - 2 = x+2-2 = x$$

$$(f^{-1} \circ f)(x) = \frac{(3x-2)+2}{3} = \frac{3x}{3} = x$$

The graphs of $f(x)$ and $f^{-1}(x)$ will be reflected over the line $y = x$



Ex given $f(x)$, draw $f^{-1}(x)$



pretend this can have an inverse

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\# 1-2