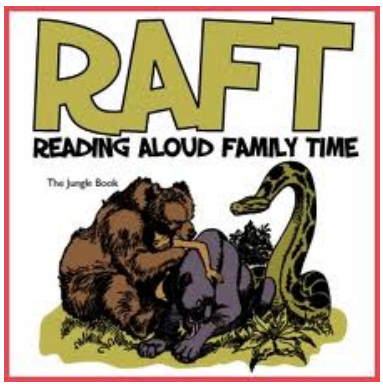
What's Going On?

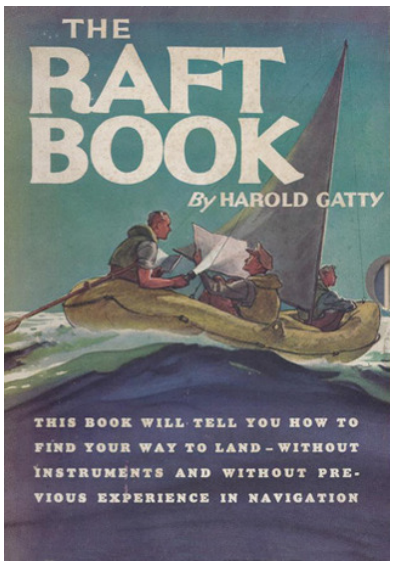
Checking In	Homework Logs
Minds on	Domain and Range of Rectangles
Action!	Inverse Functions
Consolidation	What's my inverse?

Learning Goal - I will be able to determine the inverse of a function from maps, set notation, graphs, TOVs and equations.

Checking In

R.A.F.T.





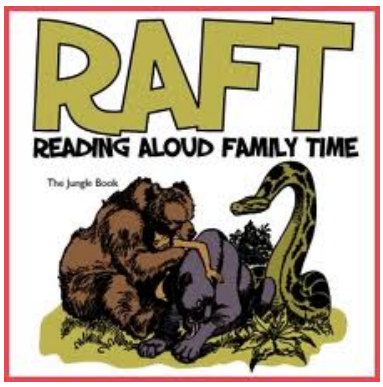
Checking In

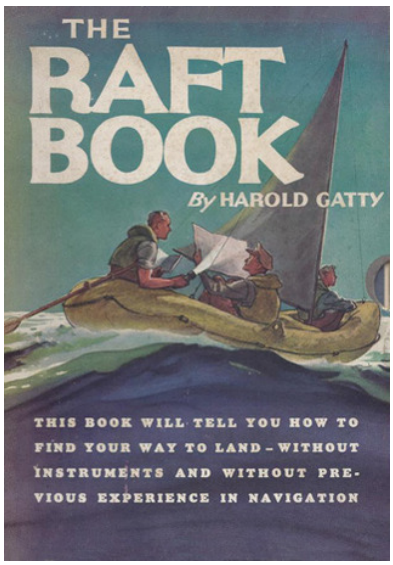
Please write your quiz, then RAFT for the remainder of the first twenty minutes.

open book!

Checking In

R.A.F.T.





What's happening at

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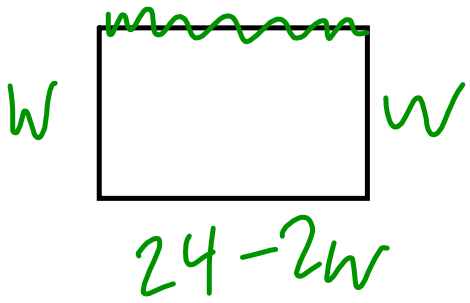
Soooo much!

Example 3:

Vitaly and Sherry have 24 m of fencing to enclose a rectangular garden at the back of their house.

a) Express the area of the garden as a function of its width.



$A(w) = w(24-2w)$

$A(w) = 24w - 2w^2$

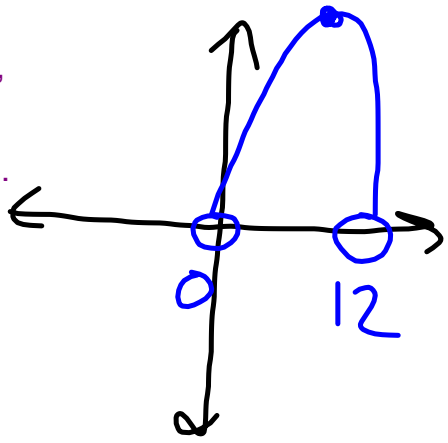
$A(w) = -2w^2 + 24w$

$A(w) = -2w(w-12)$

This is a parabola that opens down with zeros at w = 0, 12.

This means that the area is 0 when the width is 0 or 12. We can't have an area of 0, it makes no sense! So w can never actually be 0 or 12. (open circles on points)

The vertex is halfway between the zeros (at 6) so to figure out the max area (maximum value of the range) just determine A(w) when w = 6.



b) Determine the domain and range of the area function

$\text{Domain} = \{w \in \mathbb{R} \mid 0 < w < 12\}$

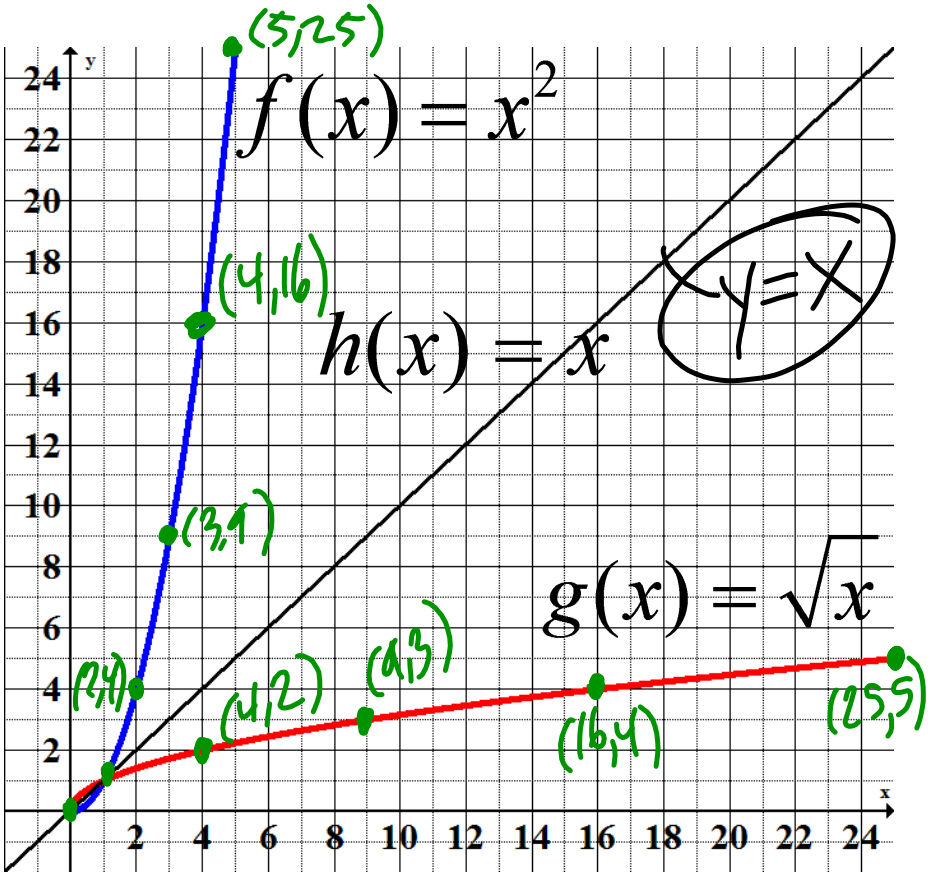
$\text{Range} = \{A(w) \in \mathbb{R} \mid 0 < A(w) \leq 72\}$

Action!

Inverse Functions

Pg. 28 #3

g(x) is just f(x) reflected across h(x)



Action!

Inverse Functions

1) The inverse of a function is the reverse of the original function.

For equations: Switch the two variables and solve for the previously independent variable.

For graphs: If point (a,b) is on f(x), then point (b,a) is on $f^{-1}(x)$.
[Domain of f is the range of f^{-1} and vice versa]

The graph of the inverse $f^{-1}(x)$ is the reflection of the graph of f(x) in the line y=x

For maps: Reverse the arrows.

For TOVs: Switch the columns. (Independent becomes dependent)

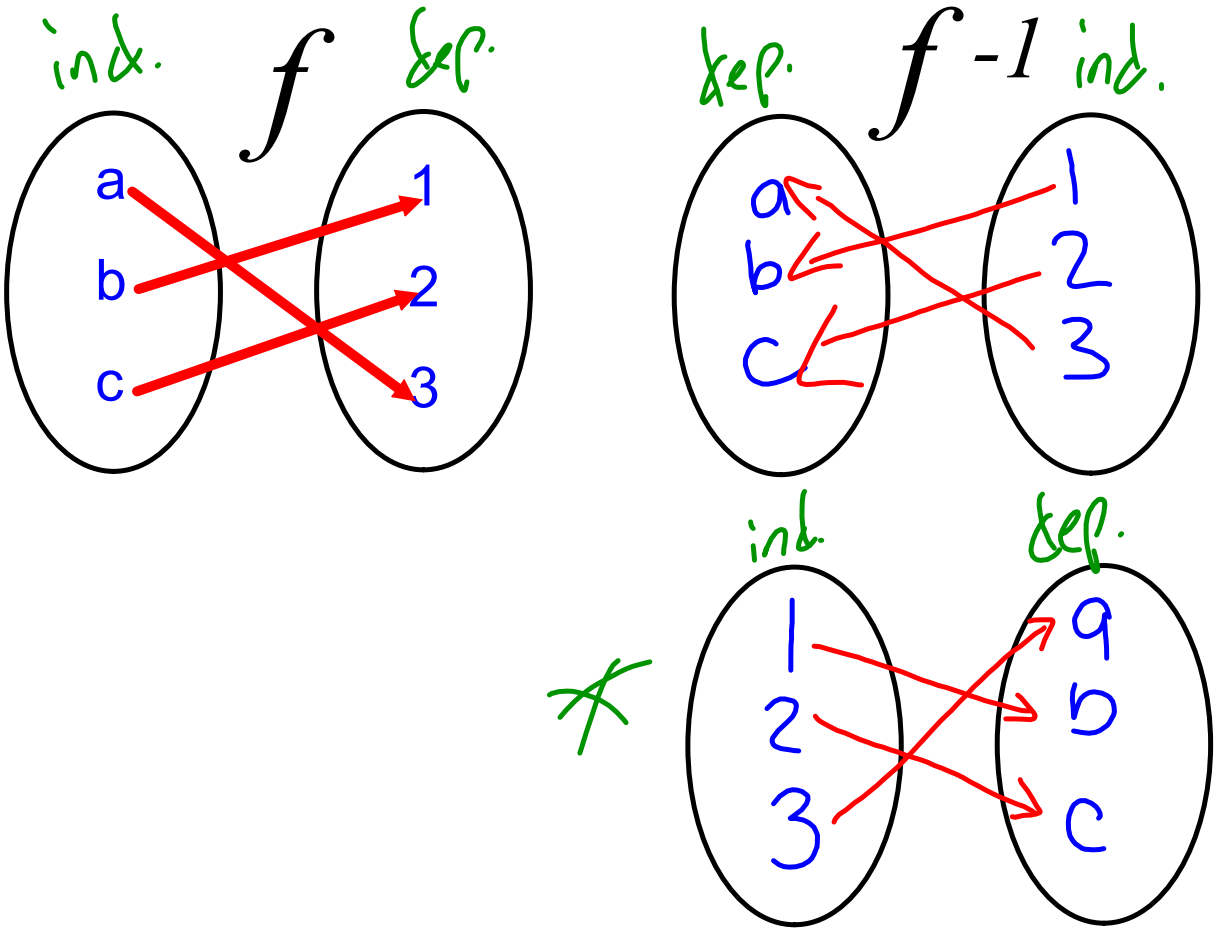
* don't switch the top row | x | y |

2) The inverse of a function is not necessarily a function (i.e. parabola)

3) f^{-1} is the notation for the inverse function of f

Consolidation

What's my inverse?



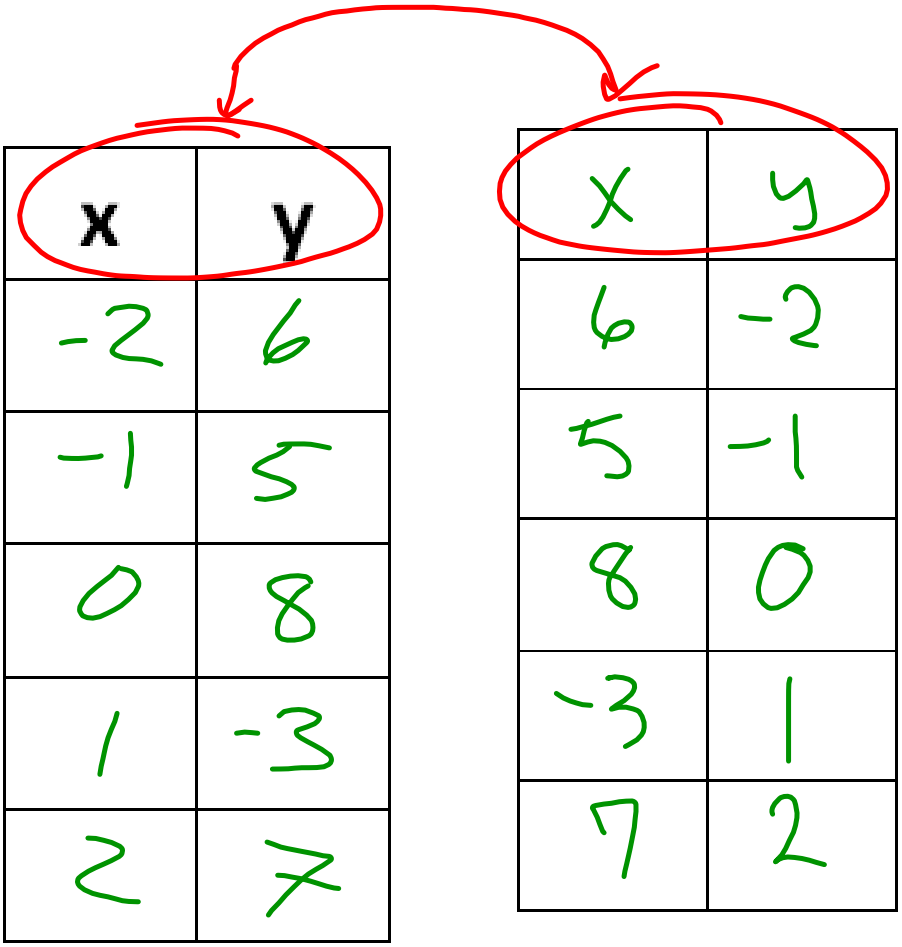
Consolidation

What's my inverse?

$$f(x) = \{(-5,0), (2,3), (6,-5)\}$$

ind dep

$$f^{-1}(x) = \{(0,-5), (3,2), (-5,6)\}$$



x	y
-2	6
-1	5
0	8
1	-3
2	7

x	y
6	-2
5	-1
8	0
-3	1
7	2

The left column is always the independent variable!

Consolidation

What's my inverse?

$$f(x) = 8x - 13$$

let $y = f(x)$

$y = 8x - 13$

$x = 8y - 13$

$+13 \quad +13$

$x + 13 = 8y$

$\frac{x+13}{8} = \frac{8y}{8}$

$\frac{x+13}{8} = y$

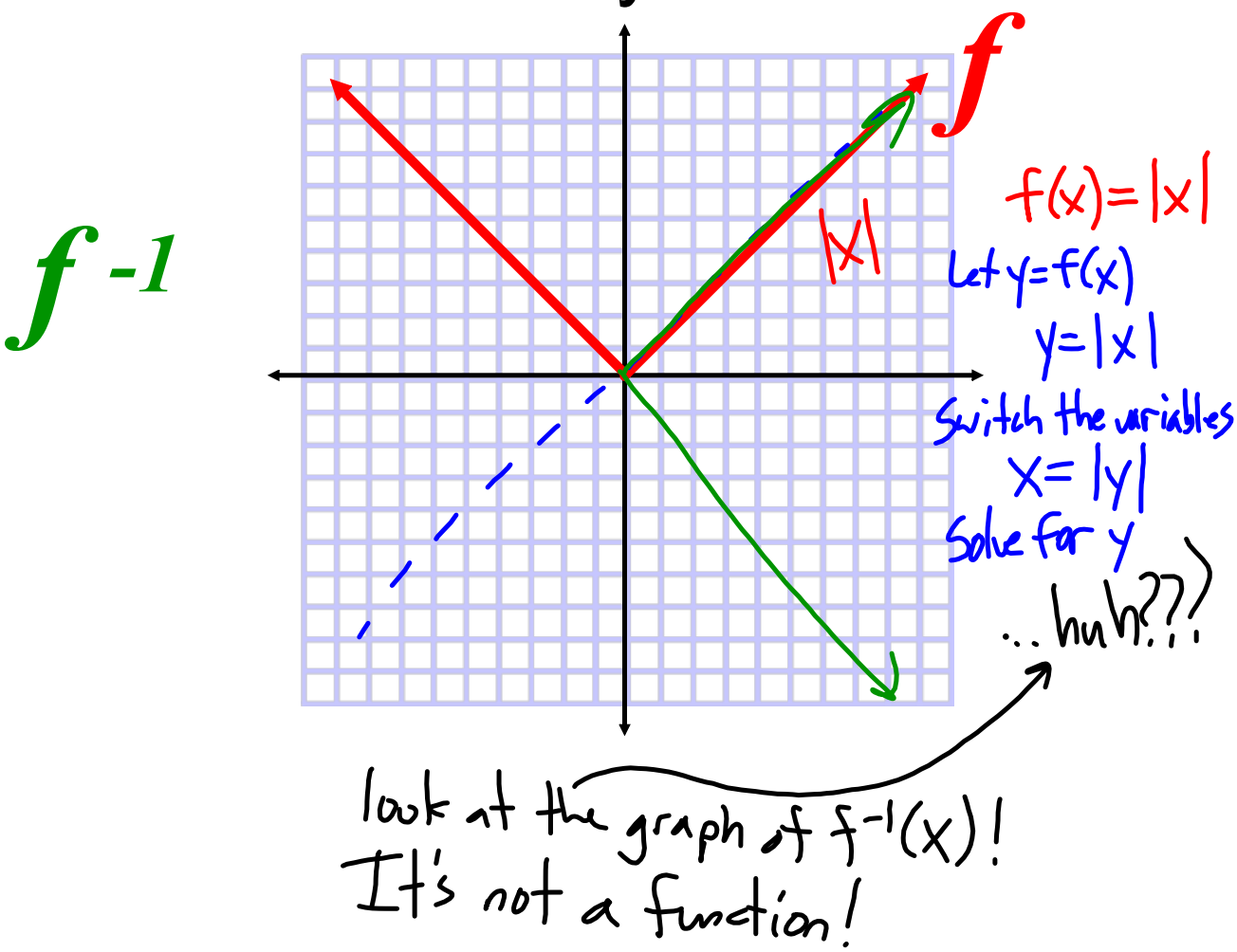
SWITCH THE VARIABLES!

SOLVE FOR y

$$f^{-1}(x) = \frac{x+13}{8}$$

Consolidation

What's my inverse?



Consolidation

Homework!

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2ac, 3, 5, 6, 8, 10, 12

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