TB
1-1

Aug. 19

Systems of Notation

I. VOCAB.

A. Rational #'s vs. Irrational #'s

↳ stop or repeat ↳ no stop, no repeat

ex./ 3.5 (stops) ex/ 5.7179234 7 7852...

ex./ $1.81818\overline{1}$... (rational) repeats ex/ $\pi = 3.141579...$

ex/ $\frac{1}{3} = 0.\overline{3}$

II. Correct way to write (number) answers

A. for x = answers

use roster notation

use { }

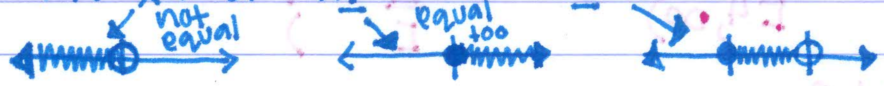
ex/ $x = 7 \rightarrow x = \{7\}$

ex/ $x = 3, -2, \text{ or } 5 \rightarrow x = \{-2, 3, 5\}$ In order!

lowest highest

B. for x< or x≥ or ≤x<

not equal or equal too



★ 1. Set-builder Notation

use { x | inequality goes here } "x such that..."

ex/ $-3 < x < 2 \rightarrow \{x \mid -3 < x < 2\}$

ex/ $x \leq 1 \rightarrow \{x \mid x \leq 1\}$

-2 -1 0 1 2

2. Interval Notation

~~{ }~~ use : ( ) means Not equality

[ ] means equal to

ex/ $-1 < x \leq 5 \rightarrow (-1, 5]$

start small — end big — Not = — = to

ex/ $2 \leq x \leq 3 \rightarrow [2, 3]$

equal to — equal

0 1 2 3 4 5

If there is NO start OR NO end #... it goes to infinity...

∞

$(-\infty \leftarrow \quad \rightarrow \infty)$

∞ goes with (always)

ex/ $x \geq 4$

0 1 2 3 4 5 $+\infty$ bigger

$[4, \infty)$

$\leq \quad \geq$

$[\quad)$

ex/ $x < 2$

start $-\infty$ forever

0 1 2

$(-\infty, 2)$

ex/ $x > -1$

( ) ∞

-1 0 1 2

$\rightarrow (-1, \infty)$

Aug. 21

TB: 1-3 Rationalizing the denominator

I. Getting $\sqrt{\ }$ out of the bottom

A. Follow the pattern

ex/ $\frac{1}{\sqrt{2}} \to \frac{(1)\sqrt{2}}{2}$ ex/ $\frac{1}{\sqrt{11}} = \frac{\sqrt{11}}{11}$

ex/ $\frac{1}{\sqrt{113}} = \frac{\sqrt{113}}{113}$

B. Simplifying from there

ex/ $\frac{9}{\sqrt{3}} = \frac{3\div 9\sqrt{3}}{3\div 3}$ ... I can cancel stuff

$= \{3\sqrt{3}\}$

$\frac{9}{3}$ normal / normal ← yes

$\frac{\sqrt{3}}{3}$ not normal / normal NO!

ex/ $\frac{12}{5\sqrt{10}} = \frac{12\sqrt{10}}{5\cdot 10} = \frac{2\div 12\sqrt{10}}{50\div 2}$

$= \left\{\frac{6\sqrt{10}}{25}\right\}$

☆ Bonus:

Adding & Subtracting $\sqrt{\ }$

☆ treat the same $\sqrt{\ }$s like an "x"

ex/ $3\sqrt{2} - 2\sqrt{2} = \{\sqrt{2}\}$

like: $3x - 2x = x$

ex/ $5\sqrt{18} + 2\sqrt{2} = 15\sqrt{2} + 2\sqrt{2}$

$= \boxed{\{17\sqrt{2}\}}$

$5 \cdot 3\sqrt{2} + 2\sqrt{2}$

Aug. 26

TB | 1-6 Functions

I. Relations

↳ Relationships between coordinates

a point → (x,y)

Relation: {(3,2)(5,7)(9,1)}

x is related to y!

II. Functions

"Every girl gets 1 guy,

Every x gets 1 y

(x is girl, y is boy)

slut-free

ex/ Jackie — Juan

Jessica — Jose

Karina — Daniel — Playa! Allowed

Antony

function

ex/

x	y
-2	5
7	8
9	0
-2	4

SLUT

x girl — y guy

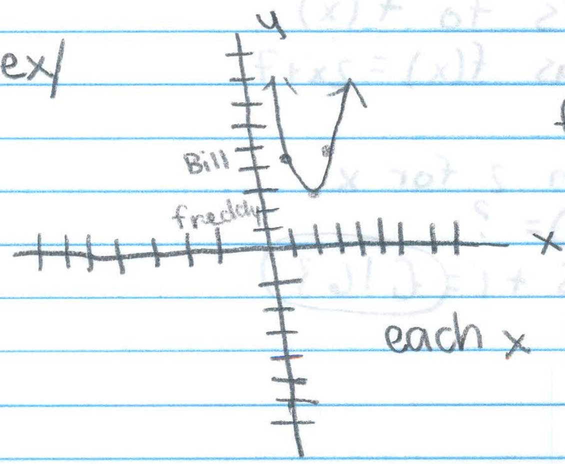
-2 ♡ 5

...

-2 ♡ 4

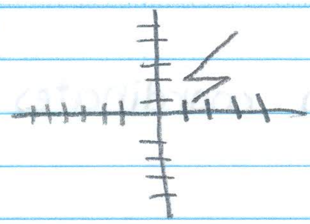
Not a Function

ex/



function

each x has 1 y

ex/   ← player! function

Slut  Not a function vertical line test fail

B. Must take vertical line test to see if it functions.

ex/ {(5,1) (3,5) (2,7) (8,5) (9,5)} Function!

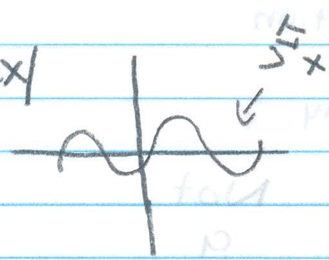
ex/ {(3,1) (2,4) (5,11)} Function!

ex)

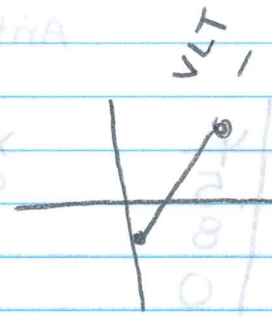
x	2	5	9	2
y	3	7	3	4

← top girl

¡No function!

ex/ 

NO!

ex/ 

Function

III. Plugging in x's to f(x)

$y = 2x + 7$ is same as $f(x) = 2x + 7$

use it because

f(2) means: plug in 2 for x

ex/ $f(x) = 5x + 1$ $f(3) = ?$

$f(3) = 5(3) + 1 = 15 + 1 = \{16\}$

(leave alone)

Aug. 27

TB: 1-9 Parent Function & their graphs

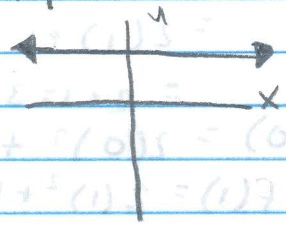
I. The parental units...

constant family

$f(x) = c$

(when c is a #)

ex| $f(x) = 3$



Linear

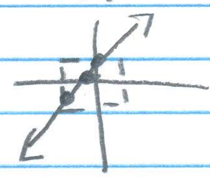
$f(x) = x$

$f(-1) = -1$

$f(0) = 0$

$f(1) = 1$

x	y
-1	-1
0	0
1	1



Quadratic

$f(x) = x^2$

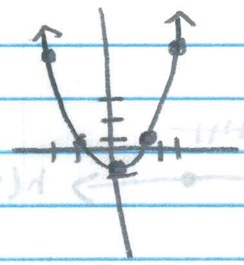
$f(-1) = -1^2 = 1$

$f(0) = (0)^2 = 0$

$f(1) = (1)^2 = 1$

$f(2) = 2^2 = 4$

x	y
-1	1
0	0
1	1
2	4



Cubic

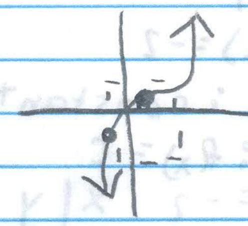
$f(x) = x^3$

$f(-1) = (-1)^3 = -1$

$f(0) = (0)^3 = 0$

$f(1) = (1)^3 = 1$

x	y
-1	-1
0	0
1	1



Square root

$f(x) = \sqrt{x}$

$f(-2) = \sqrt{-2}$ Can't!

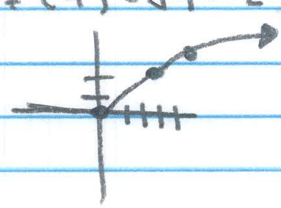
No real pt!

$f(0) = \sqrt{0} = 0$

$f(1) = \sqrt{1} = 1$

$f(4) = \sqrt{4} = 2$

x	y
0	0
1	1
4	2



II. Identifying & graphing their babies

ex/ $g(x) = 2x^2+1$

Quadratic family!

parent: $g(x) = x^2$

x	y
-2	9
-1	3
0	1
1	3
2	9

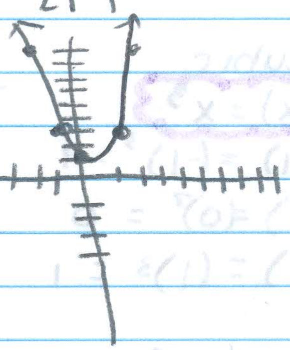
$f(-2) = 2(-2)^2+1$
$= 2(4)+1$
$= 8+1 = 9$

$f(-1) = 2(-1)^2+1$
$= 2(1)+1$
$= 2+1 = 3$

$f(0) = 2(0)^2+1 = 0+1 = 1$

$f(1) = 2(1)^2+1$
$= 3$

$f(2) = 2(2)^2+1$
$= 9$



ex/ $h(x) = -2$

Family: constant

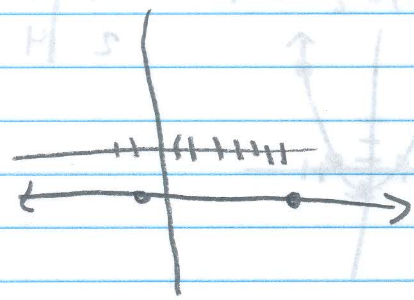
parent: $f(x) = c$

$h(-1) = -2$

$h(0) = -2$

$h(5) = -2$

x	y
-1	-2
0	-2
5	-2



$h(x) = -2$

ex/ $j(x) = \sqrt{-x+2}$

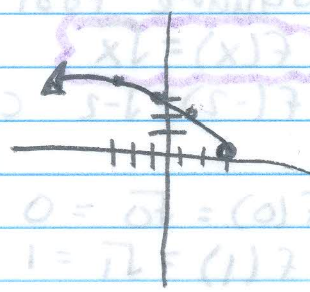
Square root

Parent: $f(x) = \sqrt{x}$

$j(2) = \sqrt{-(2)+2} = \sqrt{0} = 0$

$j(1) = \sqrt{-(1)+2} = \sqrt{1} = 1$

$j(-2) = \sqrt{-(-2)+2}$
$= \sqrt{2+2} = \sqrt{4} = 2$



x	y
2	0
1	1
-2	2

Aug. 29

1-8 locating transformations

$RS(rsx+t)+T$

R is + or −
front outside()

r is + or −
front inside()

S is a # multiplied
to ()

* s is a # multiplied
to ()

will change later

T is # back
outside ()

* t is a # back
inside ()

I. If no () no rst!

$RSx+T$

ex/ $f(x) = -3(x+6)^2 - 2$

R = −   r = +
S = 3   s = 1
T = −2   t = 6

ex/ $g(x) = 4x^3 + 7$

R) +   r = none
S = 4   s = none
T = 7   t = none