

No warm up  
today

HW Questions →

$$\boxed{70} \quad a \quad \frac{3}{x} + \frac{6}{-6} = \frac{-45}{-6}$$

$$\frac{3}{x} = -51$$

**70b**

$$\frac{x-2}{5} \stackrel{5}{=} \frac{10-x}{8}$$

$$\frac{x-2}{5} = \frac{10-x}{8}$$

$$8(x-2) = 5(10-x)$$

$$8x - 16 = 50 - 5x$$

$5x$                        $+5x$

$$13x - 16 = 50$$

$$13x = 66$$

$$x = \frac{66}{13}$$

**70c**

$$(x+1)(x-3) = 0$$

71

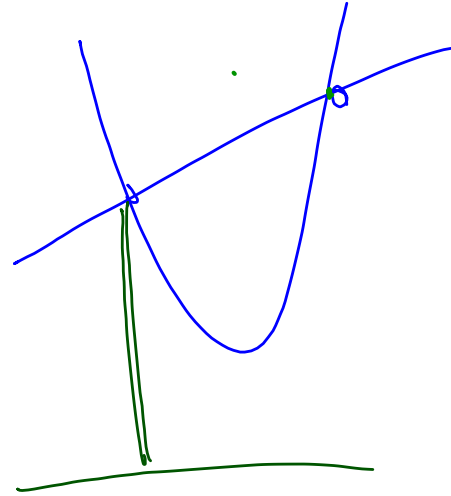
find points  
of intersection

$$f(x) = x^2 - 2x + 6$$

$$g(x) = 2x + 11$$

$$x^2 - 2x + 6 = 2x + 11$$

$\begin{matrix} -2x & -11 \\ -2x & -11 \end{matrix}$



$$= 5 = 0$$

$x = -1 \quad x = 5$



71

$$f(x) + g(x)$$

5

$$f(x) - g(x)$$

72

a

$$y = \frac{3}{5}x + 1$$

b

$$3x + 2y = 6$$

c

$$y = x^2$$

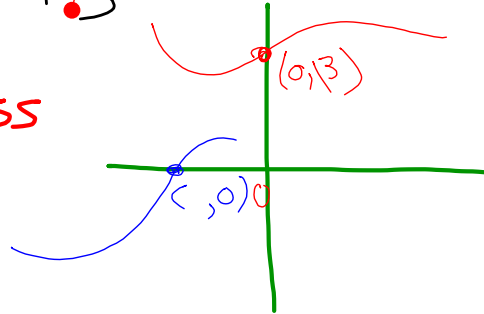
d

$$y = x^2 - 100$$

$$\boxed{76} f \quad y = \cancel{3x^3} - \cancel{2x^2} + 3$$

$\uparrow$                        $\uparrow$   
 $0$                        $0$

Where does it cross  
the y-axis?



$$3x + 2 = 10 - 4(x-1)$$

$$3x + 2 = \cancel{6}(x-1)$$

$$3x + 2 = 10 - 4x + 4$$

b)

$$x = 5y - 10$$

$$0 = 5y - 10$$

$$(0, 2)$$
$$[77]$$

Today you will learn

- a "Big Picture" skill

that can be applied throughout  
the rest of the Algebra 2 course.

GOALS:  
→

# Analyze a Function

Using 6 Components

Just watch  
for now.

In order to do that you  
need a solid understanding  
of **ASYMPTOTES**

*we need a function with issues in the  
denominator.*



$$f(x) = \frac{1}{(x-7)}$$

~~$$f(x) = \frac{1}{x-7} \rightarrow$$~~

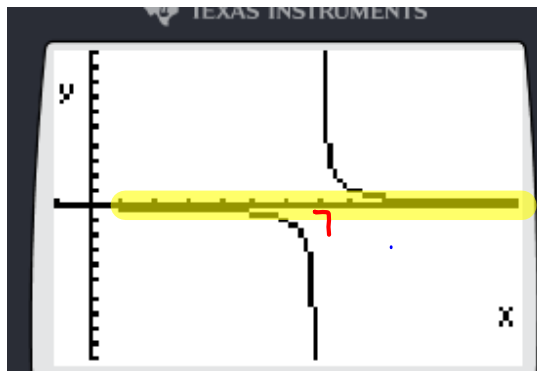
graph  $f(x) = \frac{1}{x-7}$

From the table look at the y-values associated with the five x-values below 7 and the five above

What is the x-value  
that has no y-value?

x	y
2	-0.2
3	-0.25
4	$-0.\bar{3}$
5	-0.5
6	-1
7	undef.
8	1
9	0.5
10	$0.\bar{3}$
11	0.25
12	0.2

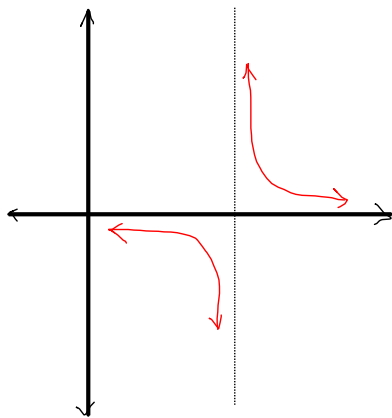
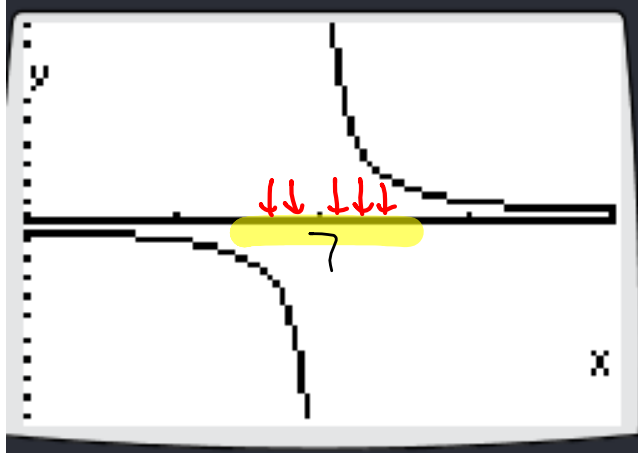
What is the x-value  
that has no y-value?



domain

x	y
2	-0.2
3	-0.25
4	$-0.\bar{3}$
5	-0.5
6	-1
7	undef.
8	1
9	0.5
10	$0.\bar{3}$
11	0.25
12	0.2

Focus on  
y-values  
Very close  
 $x=7$

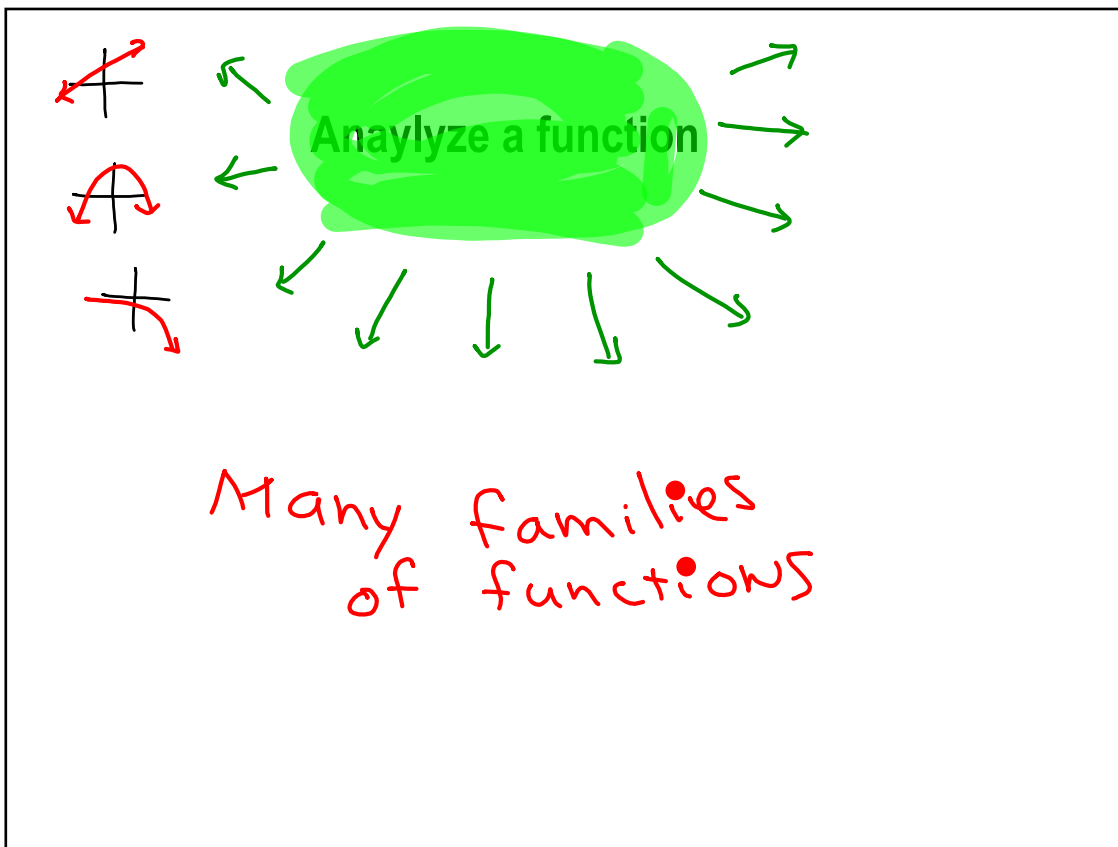


enter

x	y
6.8	
6.9	
6.99	
6.999	
6.9999	
7	
7.0001	
7.001	
7.01	
8	
9	

Use trace

7.5



6 Components



NOTES

## Function Investigation Questions

to help make *Summary Statements about Functions*

- ✓ 1. Sketch the function.
2. Describe any special points or "locator points" (if any) and provide their coordinates? (*besides x- and y-intercepts*)
- ✓ 3. What the domain and range ?
- ✓ 4. Axis intercepts:
  - a. What is the y-intercept? (*when  $x=0$* )
  - b. What are the x-intercept(s)? (*when  $y=0$* )

### 5. Asymptotes:

- a. Are there any vertical asymptotes? If so what are their equations? ( *$x=$  some number*)
  - b. Are there any horizontal asymptotes? If so what are their equations? ( *$y=$  some number*)
6. What kind of symmetry does this function have? (if any)(y-axis symmetry?, x-axis symmetry? rotational symmetry about the origin  $(0,0)$ ?)

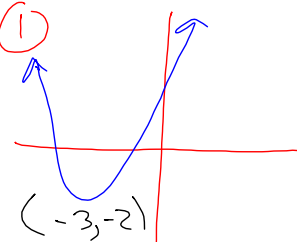
The closer we get to  $x=7$   
the y-values get infinitely large  
or small.

..... which is an **asymptotic** situation

ANALYZE

$$y = (x + 3)^2 - 2$$

Using the ~~9~~<sup>6</sup> investigation  
questions

① 

② Vertex  
 $(-3, -2)$

③ Domain  
 $-\infty < x < \infty$

Range  
 $-2 \leq y < \infty$

④ y-intercept  
 $(0, 7)$

$$y = (0+3)^2 - 2$$

$$= 3^2 - 2$$

$$= 7$$

x-intercept  
 $(-1, 0) (-5, 0)$

⑤ none

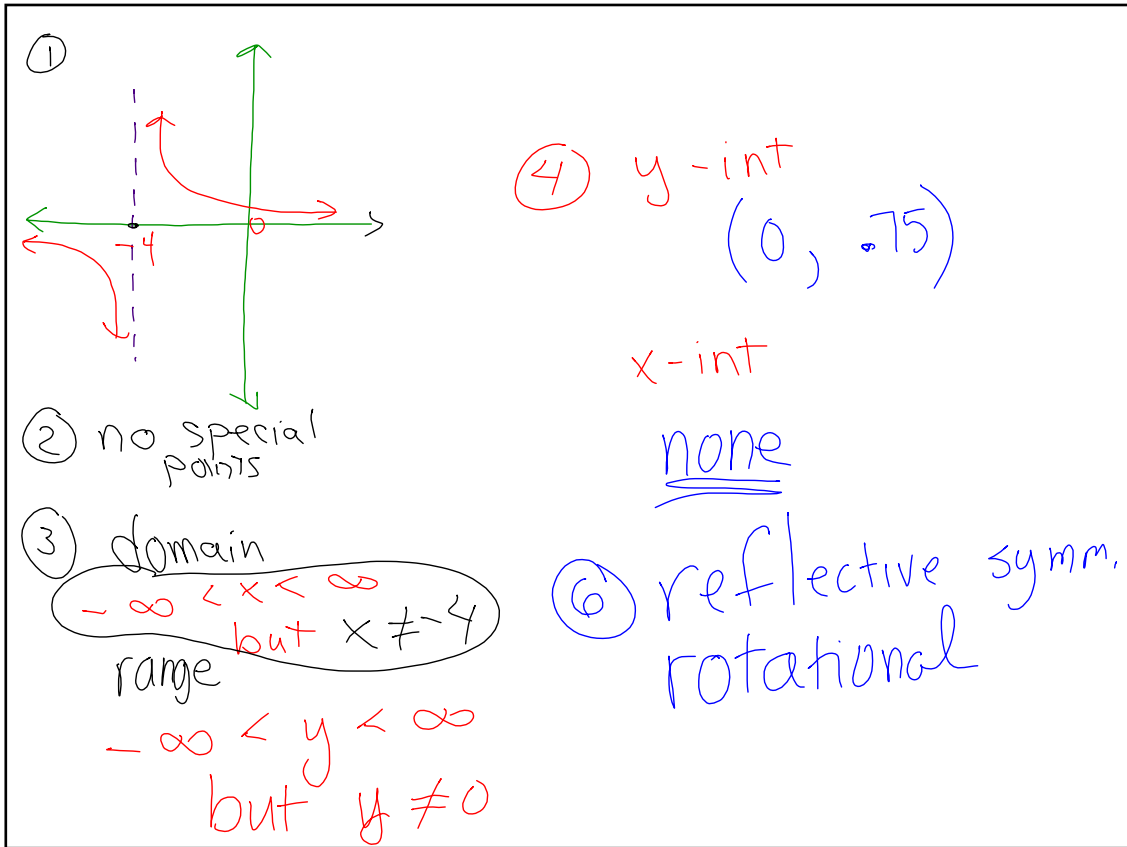
⑥ reflective symmetry

$$0 = (x+3)^2 - 2$$
$$\sqrt{(x+3)^2} = \sqrt{2} \quad (-4.41, 0)$$
$$\bullet x+3 = \pm\sqrt{2} \quad (-1.58, 0)$$
$$x = -3 \pm \sqrt{2}$$
$$-4.41 \quad -1.58$$



B.B.

Analyze  $y = \frac{3}{x+4}$   
using the 6 components



### ⑤ Asymptotes

Vertical at  $x = -4$

Horiz at  $y = 0$

## Assignment

1 - 84, 86, 89ade, 94, 95, 97

↑  
do quickly  
with  
GDC

Use the 6  
components.