

Warm Up
(in your notes)

HW
Questions

① Find the center and radius
of $x^2 + y^2 - 8x + 10y = -5$



② Then graph
the circle $(x+3)^2 + (y-4)^2 = 36$ on
your GDC

$$\textcircled{1} \quad x^2 + y^2 - 8x + 10y = -5$$

$$x^2 - 8x + 16 + y^2 + 10y + 25 = -5 + 16 + 25$$

$$(x-4)^2 + (y+5)^2 = 36$$

$$r = 6$$

$$(4, -5)$$

② graph on your calculator

② Then graph.

the circle $(x+3)^2 + (y-4)^2 = 36$ on

your GDC

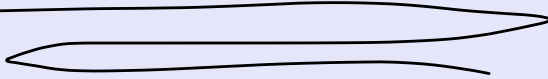
$$\sqrt{(y-4)^2} = \sqrt{36 - (x+3)^2}$$

$$y-4 = \pm \sqrt{36 - (x+3)^2}$$

$$y = 4 \pm \sqrt{36 - (x+3)^2}$$

HW
Questions

50 →



50

$$5x^3 + 35x^2y + 50xy^2$$

NOT IN SOLUTIONS

FACTOR
completely

$$5xy(x^2 + 7x + 10)$$

$$5xy(x \quad)$$

3-54

Circle

(a) center (0,0)
r=6

$$x^2 + y^2 = 36$$

(b) center (2,-3)
r=6

$$(x-2)^2 + (y+3)^2 = 36$$

$$c) \quad x^2 + y^2 - 8x + 10y = 5$$

$$\begin{aligned} \underline{45 a)} \quad & (n+4) + \widehat{n(n+2)} + n = 0 \\ & \underbrace{n+4} + \underbrace{\underline{n^2}} + \underbrace{2n} + \underbrace{n} = 0 \\ & n^2 + 4n + 4 = 0 \end{aligned}$$

b) $\frac{4}{x} = x + 3$

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a) $(ab)^2$

$$a^2 b^2$$

b) $3x - 4y = 12$
 $-3x$ $-3x$

$$y = \frac{3}{4}x - 3$$

$$c) y = 2(x-1) + 3$$

$$y = 2x + 1$$

$$d) (a+b)^2$$

$$a^2 + b^2$$

$$e) \frac{x^6}{x^2}$$

$$x^4$$

$$f) y = 3(x-5) + 2$$

$$y = 2x - 8$$

$$49) a. t(n) = 450,000 (1.03)^n$$

$$b. t(10) = 450,000 (1.03)^{10} = \$604,732.37$$

604,762

$$\text{Profit} : \begin{array}{r} 604,732.37 \\ - 450,000.00 \\ \hline \end{array}$$

$$\$154,732.37$$

$$\frac{154,762.37}{450,000} = .343916 \dots \underline{\underline{34.39\%}}$$

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$$7 \sqrt[4]{x^3}$$

46b

$$3x - 4y = 12$$

$$y = \frac{3}{4}x - 3$$

$$\begin{aligned}(ab)^2 &= ab \cdot ab \\ &= a \cdot a \cdot b \cdot b \\ &= a^2 b^2\end{aligned}$$

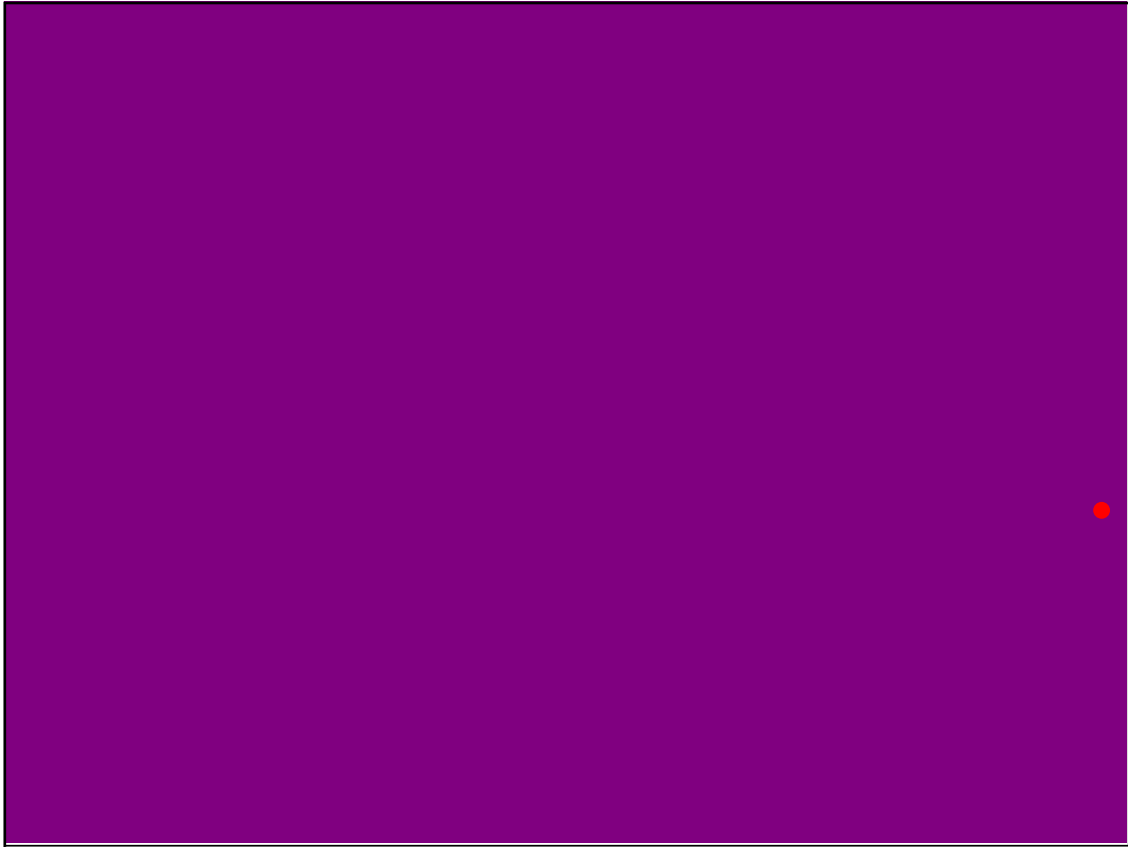
53 |

$$c \quad \sqrt[8]{17^x} \quad (17^x)^{\frac{1}{8}} = 17^{\frac{x}{8}}$$

$$d \quad 7 \cdot \sqrt[4]{x^3} = 7 \cdot x^{\frac{3}{4}}$$

$$54c) \quad x^2 + y^2 - 8x + 10y + 5 = 0$$

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JUST
Observe

Combine functions
and analyze them

$+$ $-$ \times \div

Specifically Polynomial
functions

→ one will
be a new
type of
function

Need to be in pairs

One person in the pair will be an **A**

The other a **B**

Each pair will investigate
4 combinations of the same
two functions

- one paper per pair
- one calculator per pair
- rotate responsibilities.
writer ↔ GDC

careful with ()

$f(x) = 3x - 7$ $g(x) = 10x - 1$

$f(x) + g(x)$

$\frac{f(x)}{g(x)} =$

Pair #1

Person A

Person B

Period

our two functions : $f(x) = x - 2$ $g(x) = 2x + 3$

1 A writes B does part c on GDC

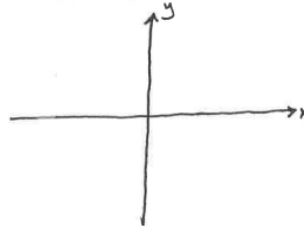
a) Perform the operation shown (simplify if possible)

$y = x - 2 + 2x + 3$

don't simplify

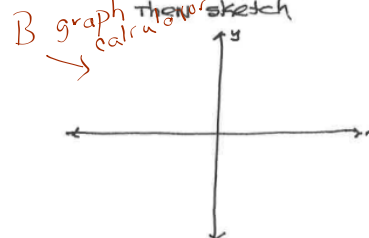
$f(x) + g(x)$

b) Prediction of graph of $f(x) + g(x)$

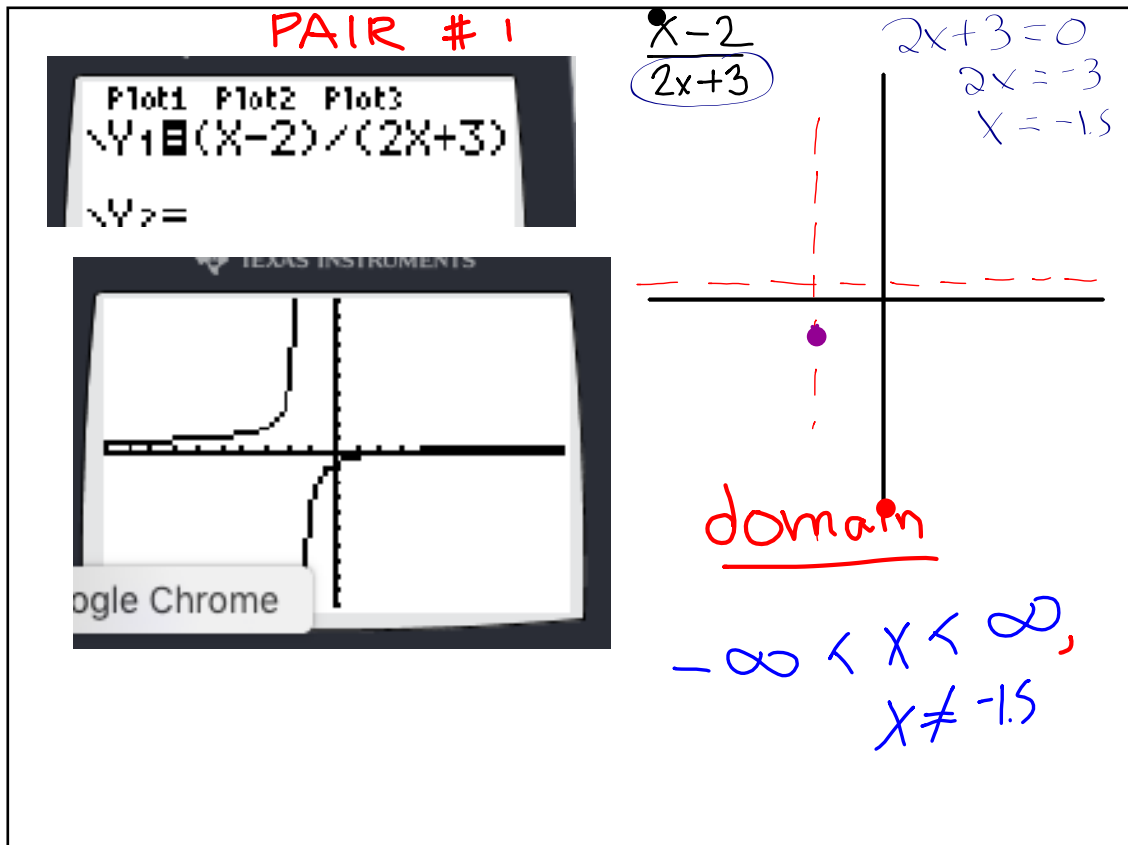
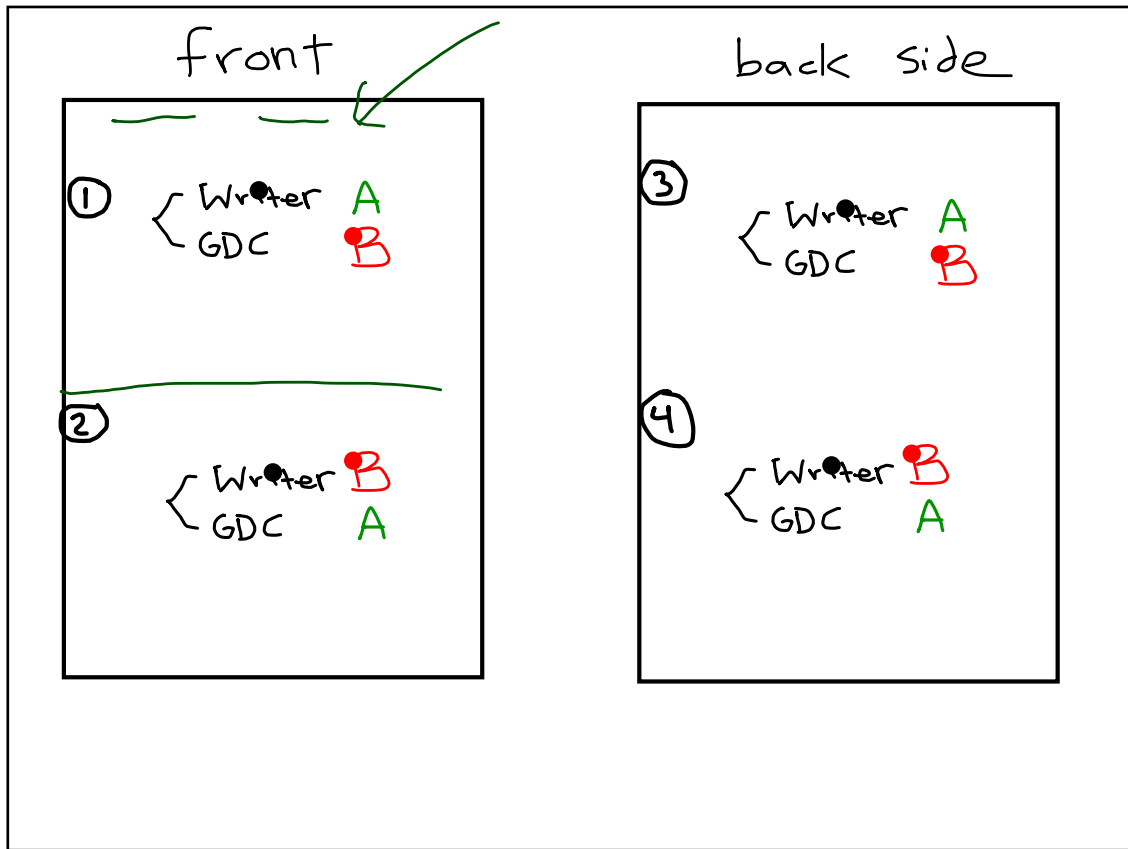


B predicts

c) Person B graphs $f(x) + g(x)$ ON GDC then sketch



domain:



You just took two functions

$$g(x) = 4x - 6$$

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

and combined them
in various ways

and found the new function family

NOTES →

Today's AIM

Rational

FUNCTIONS

$y = \frac{1}{x}$ is the parent of all rational functions

$f(x) = \frac{1}{x}$
parent

$g(x) = \frac{2x}{3x-7}$

$h(x) = \frac{2x^2+3x-7}{2x+5}$

$f(x) = \frac{\text{polynomial}}{\text{polynomial}}$

~~$y = \frac{2x}{5+x}$~~

must be at least degree 1 (NO CONSTANTS)

background
(notes only if you want)

What do polynomials
look like?

(any
real
#) x <sup>non-integer
any positive
integer</sup>

$$7x^5$$

$$3x^{10}$$

$$2x^{12}$$

MONOMIALS

$(\text{any real } \neq 0) x^{\text{any positive integer}}$

OR

$(\text{any real } \neq 0) x^{\text{positive integer}} + (\text{any real } \neq 0) x^{\text{positive integer}}$

$y = x^2 - 2x + 7$

$\sqrt{7} x^3 - 8x^6$

x^2 x^5 x^{11}

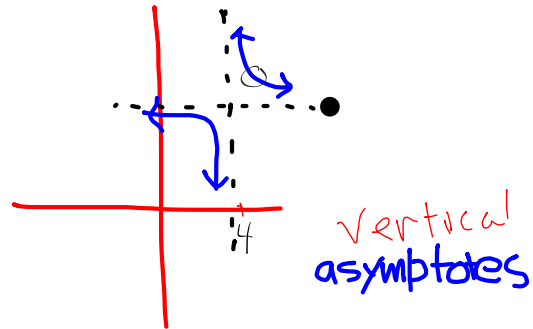
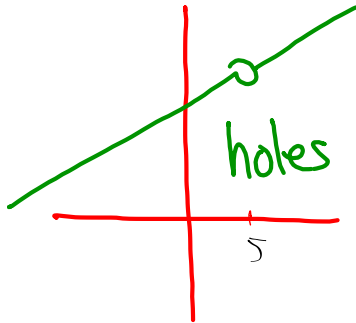
degree 7 $4x^7$

degree 1 x

degree 0 $6x^0 = 1$ 6

$7x^0$

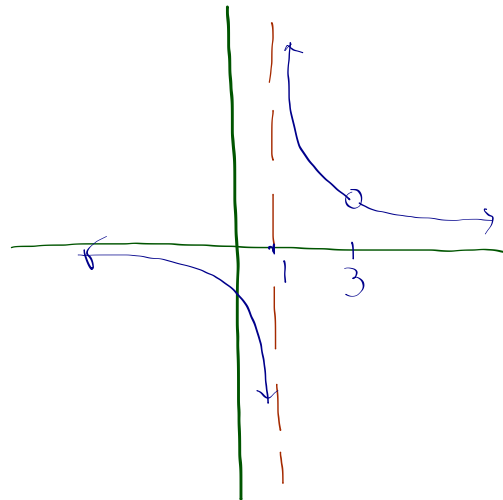
Rational functions create graphs that have
2 types of vertical discontinuities

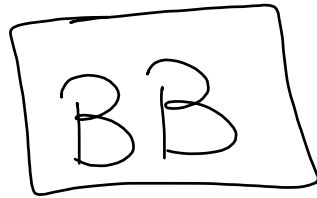


Graph, sketch,
and label...

$$y = \frac{2(x-3)}{x^2 - 4x + 3}$$

Hole at $x=3$
VA at $x=1$



A hand-drawn rectangular box with a slightly irregular border, containing the letters 'BB' written in a simple, cursive-like font.

- Check your answers by referring to the Checkpoint 3A materials section of the answers.
- If you feel that you need more confidence when solving these types of problems, then review the Checkpoint 3A materials and try the practice problems provided. From this point on, you will be expected to do problems like these correctly and with confidence.

turn in
your investigation

LCA

Assignment

3 63 to 69



67 is a Checkpoint problem

Pair A

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

Pair B

$$f(x) = x - 3$$
$$g(x) = 5x - 9$$

