

① Let Me know right away if have any HW QUESTIONS

QUESTION 3 was missing

$$y = x^2 - 4x + 9$$



② Pick Up and the front side of the Warm Up only.

Do the Warm Up

front side only 😊

- ① Factor $n^2 - 49$ (HINT: Use difference of Squares) = $(n+7)(n-7)$
 Factor $16x^2 - 25$ = $(4x+5)(4x-5)$
 $[4x]^2 - [5]^2 =$
- ② What is the parent function of $y = (x-3)^2 + 6$ $y = x^2$
 " " " " " " $y = 5\sqrt{x+1} - 7$ $y = \sqrt{x}$
 " " " " " " $y = 2\left(\frac{1}{x+10}\right) - 18$ $y = \frac{1}{x}$
 $2\left(\frac{1}{x+10}\right)$
 $\frac{1}{x+10}$
 $\frac{1}{x}$

- ③ With each of the parent functions below, write a transformed function that has a vertical stretch of $\frac{up}{7}$, a horizontal shift left 20, and a vertical shift down 11.

a) Parent
 $y = |x|$

Transformation
 $y = 7|x+20| - 11$

b) $y = \frac{1}{x}$

$$y = 7\left(\frac{1}{x+20}\right) - 11$$

c) $y = 3^x$

$$y = 7(3)^{x+20} - 11$$

$$7(3^{x+20}) - 11$$

④ The general form of a transformation of $y = x^2$ is $y = a(x-h)^2 + k$, what is the general form

for

a) $y = \sqrt{x}$

$$y = a\sqrt{x-h} + k$$

b) $y = \frac{1}{x}$

$$y = a\left(\frac{1}{x-h}\right) + k$$

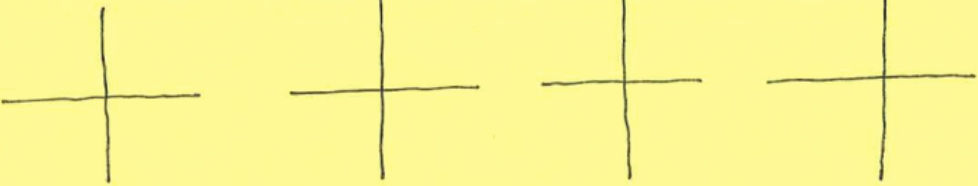
HW
handout

Assignment 2.2.1
day 2

Name _____

① Without a GDC, sketch each function (remember to identify the parent first)

$y = \sqrt{x+4}$ $y = (x-5)^3$ $y = -\sqrt{x-2} - 3$ $y = \frac{1}{5}\left(\frac{1}{x}\right) + 3$



The image shows four blank Cartesian coordinate systems arranged horizontally. Each system consists of a vertical y-axis and a horizontal x-axis intersecting at the origin. These are intended for sketching the four functions listed above.

② Find both the y-int and x-int algebraically of $y = (x-3)^2 - 1$

③ Complete the square to convert to graphing form (try if you want, to do so without the box)

$$y = x^2 - 4x + 9$$

④. Complete the square to convert to graph form

$$y = 2x^2 - 16x + 30$$

$$\frac{y}{2} + 16 = x^2 - 8x + 16 + 15$$

$$\frac{y}{2} + 16 = (x - 4)^2 + 15$$

$$\frac{y}{2} = (x - 4)^2 - 1$$

$$y = 2(x - 4)^2 - 2$$

$$\left(\frac{-8}{2}\right)^2 = 16$$

Factoring Binomials

Factor each binomial equation (using the Difference of Squares Shortcut)

Example: $9x^2 - 4 = (3x + 2)(3x - 2)$

1. $4x^2 - 1 =$

2. $x^2 - 9 =$

3. $36x^2 - 9 =$
 $(6x+3)(6x-3)$
 $9(4x^2-1) = 9(2x+1)(2x-1)$

4. $100x^2 - 81 =$

5. $25x^2 - 4 =$

6. $81x^2 - 121 =$

5. $25x^2 - 4 =$

6. $81x^2 - 121 =$

7. $x^2 - 16 = (x+4)(x-4)$

8. $144x^2 - 16 =$
 $(12x+4)(12x-4)$
 $16(9x^2 - 1) = 16(3x+1)(3x-1)$

9. $x^2 - 25 =$

10. $625 - 16x^2 =$

11. $100 - x^2 =$

12. $x^2 - 36 =$

13. $121x^2 - 49 =$

14. $49x^2 - 16 =$

Cross out the correct answers below. Use the remaining letters to complete the statement.

$(x+13)(x-13)$ THE	$16(3x-1)(3x-1)$ SUM	$(x-4)(x+4)$ OFA	$(6x+5)(6x-5)$ PRO	$(25-4x)(25+4x)$ QUO	$(x+1)(x-1)$ DUC
$(9+x)(9-x)$ TOF	$9(2x-1)(2x+1)$ TIE	$(x+7)(x-7)$ THE	$(2x+1)(2x-1)$ NTA	$(9x+1)(9x-1)$ SUM	$(x+2)(x-2)$ AND
$(10-x)(10+x)$ WAS	$(5x+3)(5x-3)$ DIF	$(x-5)(x+5)$ HAS	$(8x+1)(8x-1)$ FER	$(11x-7)(11x+7)$ MAN	$(x-6)(x+6)$ NER
$(x+18)(x-18)$ ENC	$(10x-9)(10x+9)$ THA	$(x-3)(x+3)$ TIS	$(5x-2)(5x+2)$ MYP	$(7x+11)(7x-11)$ EOF	$(x+8)(x-8)$ THE
$(x+15)(x-15)$ SQU	$(9x-11)(9x+11)$ ROB	$(x+9)(x-9)$ ARE	$(3x+2)(3x-2)$ ROO	$(7x-4)(7x+4)$ LEM	$(x+9)(x-9)$ TS.

15. The factored form of the difference of the two squares is

Aim

Recognize Parent Functions

by looking at graphs or
equations of transformations

(a.k.a. "think backwards".)

brainstorm

all of the function
types you can think
of

lines

parabolas

hyperbolas $y = \frac{1}{x}$

cubics

square root

exponentials

absolute value

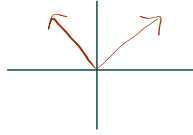
Function Familiarity

recognition test !!!

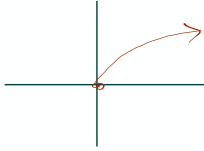
↳ NOT a real test

I give you the function,
you sketch

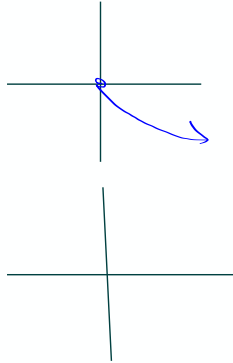
$$y = |x|$$



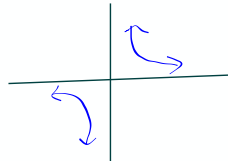
$$y = \sqrt{x}$$



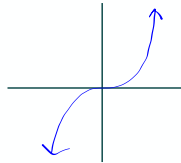
$$y = -\sqrt{x}$$



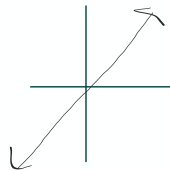
$$y = \frac{1}{x}$$



$$y = x^3$$



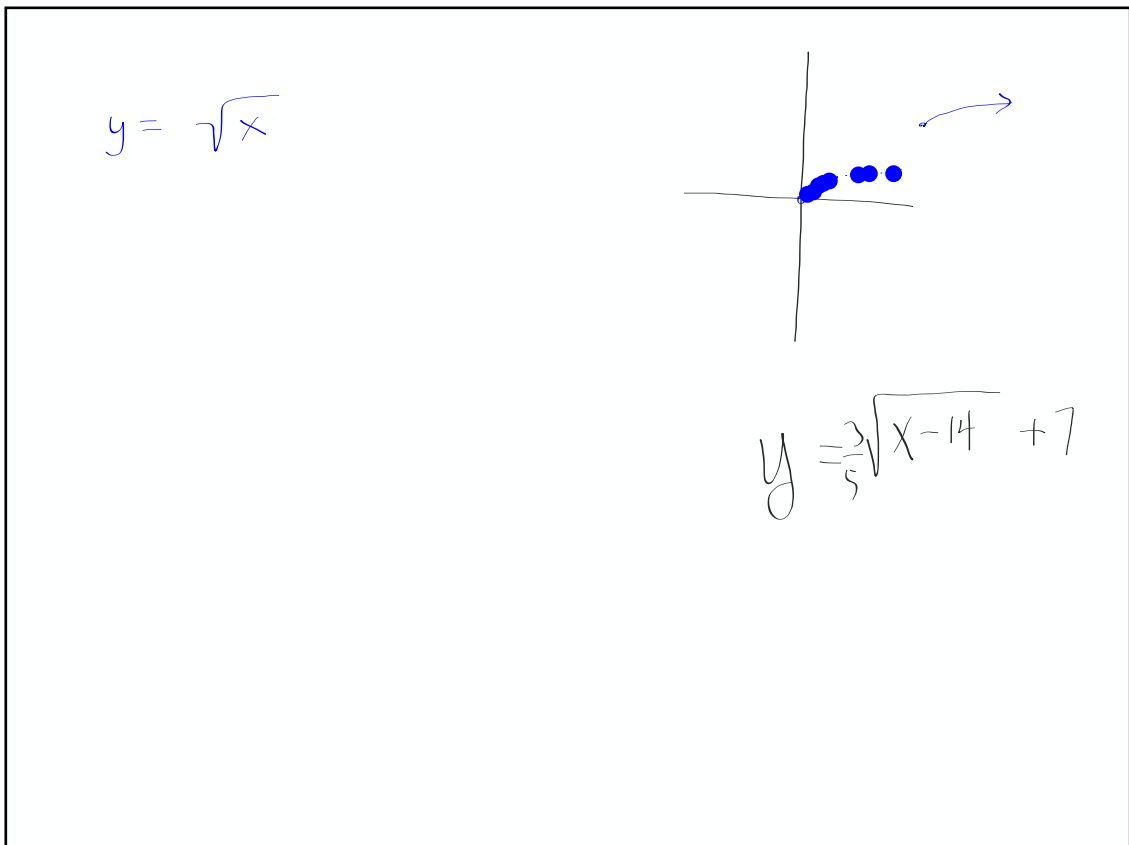
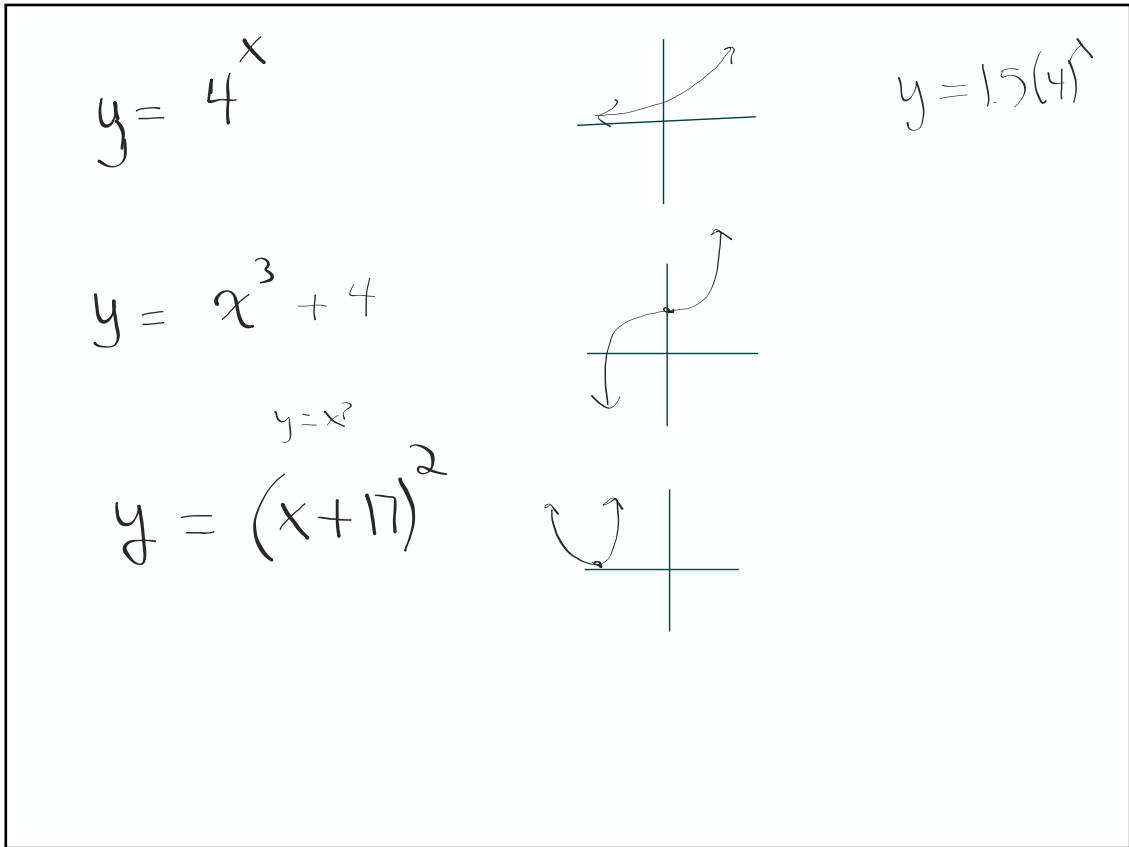
$$y = x$$



$$y = 2x - 1$$

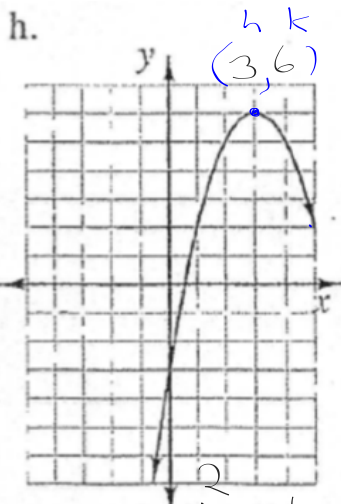
$$y = x + 7$$

$$y = \frac{2}{3}x + 4$$



back side of warm up

1. Identify the parent function shown on the graph
2. Find the locator point of the graph shown.
3. Write the function that matches the transformation shown.



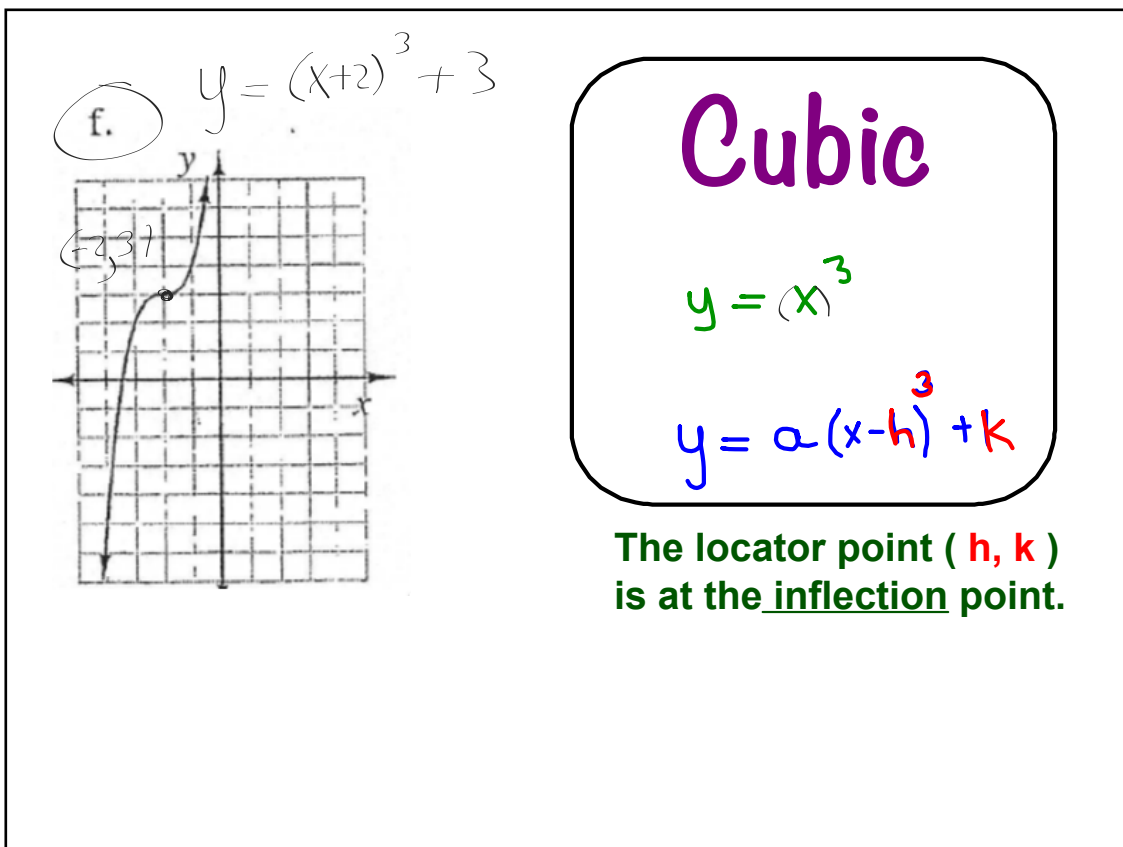
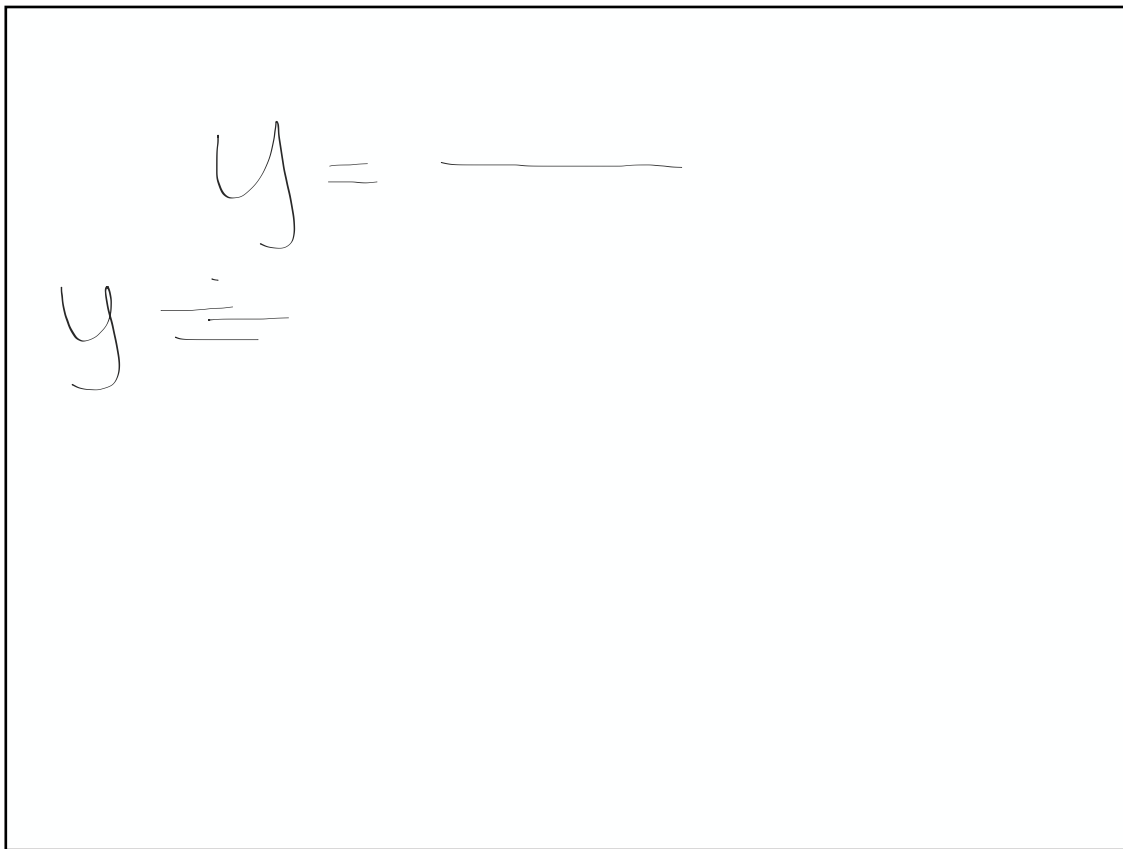
$$y = -(x-3)^2 + 6$$

Parabola

$$y = x^2 \quad \bullet$$

$$y = a(x-h)^2 + k$$

The locator point (h, k) is at the vertex of a parabola



a.

$y = \frac{1}{x+2}$

Hyperbola

$$y = \frac{1}{x}$$

$$y = \frac{a}{x-h} + k$$

The locator point (h, k) is in between the two branches.

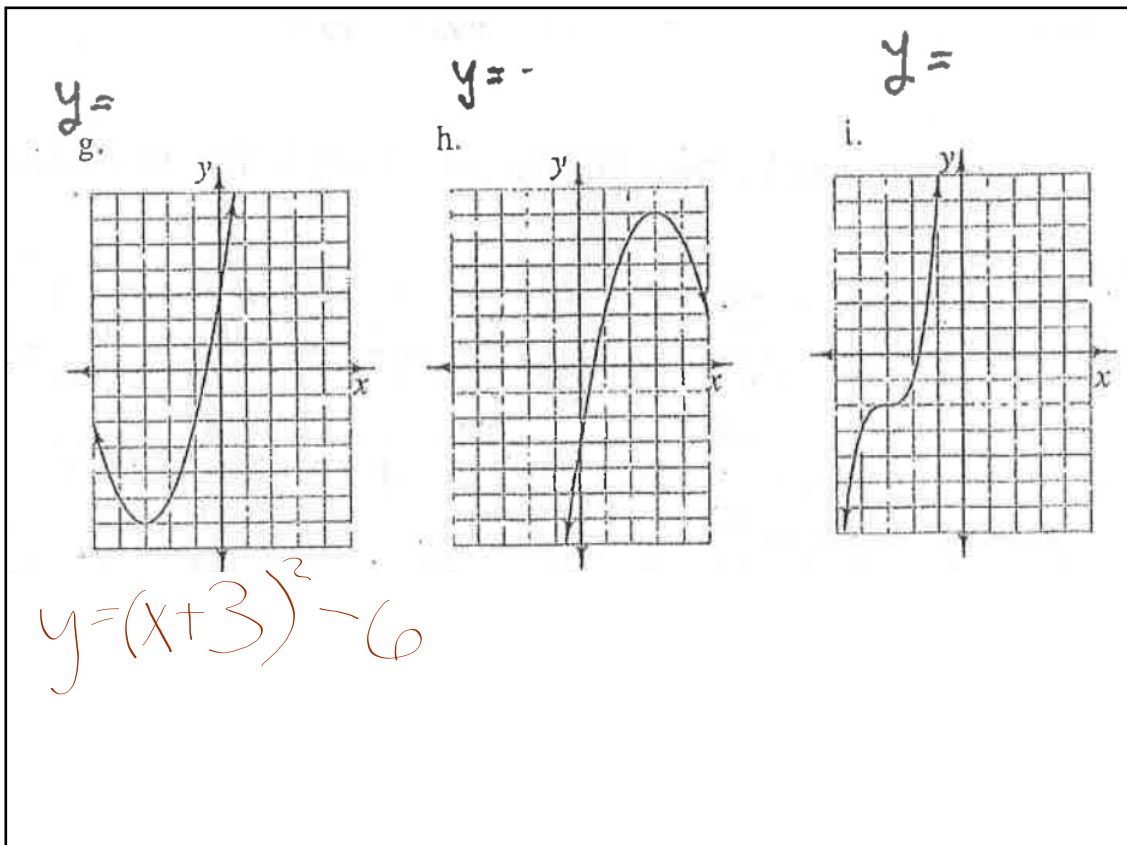
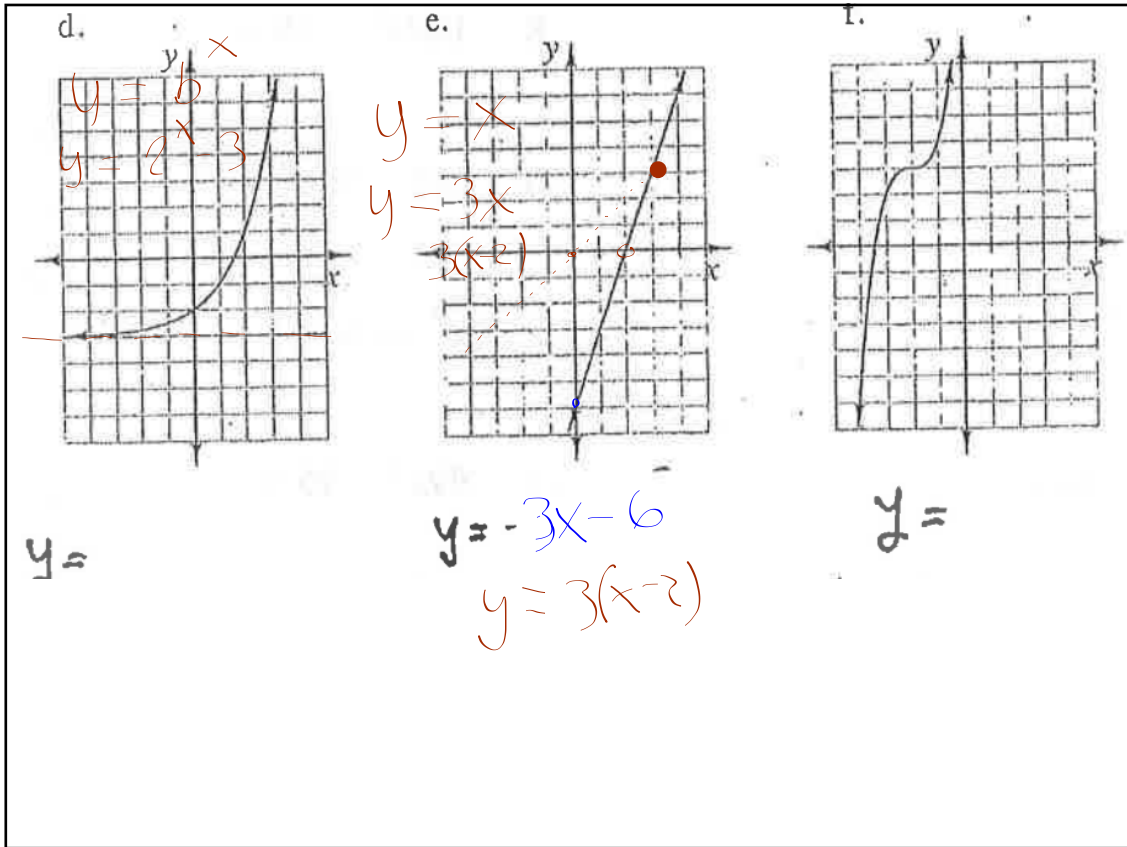
a.

b.

$y = x^2 - 5$

c.

$y = (x-3)^3$



BB

2 - 107-109, 110a, 111, 113, 119

The Chapter 2 test is Thursday