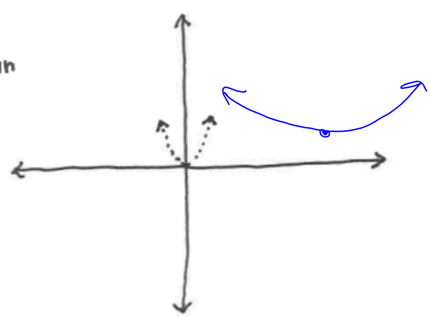
Pick up the Warm Up

HW Questions...you know what to do.

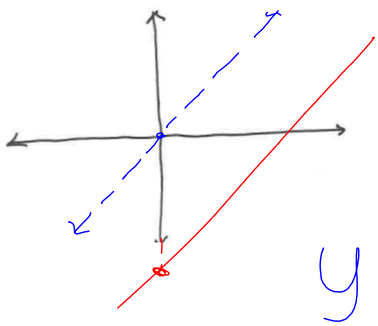
1 Sketch, without a GDC,

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

$y=x^2$ is shown



2 With your GDC, if needed sketch $y = x$



3 Would the same strategy work with a line?

Try sliding the line you sketched in problem #2 five units to the right.

$y = x$ would become $y =$ ______

$y = (x-5)$

$y = x - 5$

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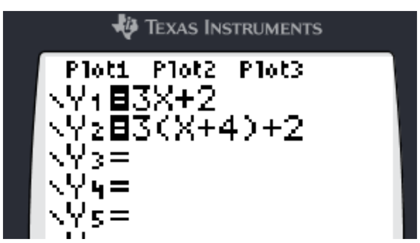
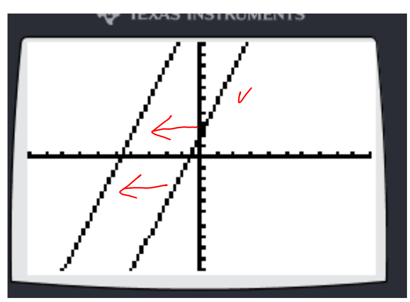
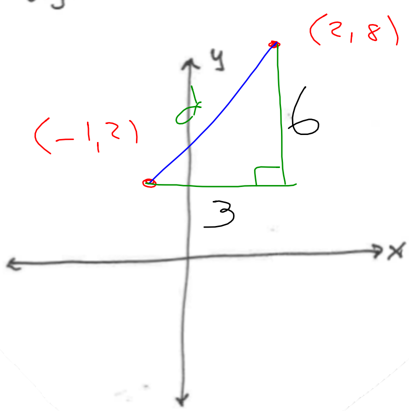
4 Try sliding the line $y = 3(x)+2$ four units to the left.

$y = 3(x+4)+2$





5 Two points $(-1, 2)$ and $(2, 8)$ form a segment. Find the length of the segment.



$$d^2 = 3^2 + 6^2$$

$$d^2 = 9 + 36$$

$$d^2 = 45$$

$$\sqrt{d^2} = \sqrt{45}$$

$$d = \sqrt{45}$$

6 Now find the equation of the straight line that passes through the two points.

$(-1, 2)$ and $(2, 8)$

$$m = \frac{8-2}{2--1}$$

$$m = \frac{8-2}{2--1}$$

$$m = \frac{6}{3} = 2$$

$$y = mx + b$$

① ②

$$y = 2x + b$$

$$8 = 2(2) + b$$

$$8 = 4 + b$$

$$b = 4$$

$$y = 2x + 4$$

6 Now find the equation of the straight line that passes through the two points.

$(-1, 2)$ and $(2, 8)$

$y = mx + b$

① ②

$m = \frac{-}{-}$

$m = \frac{8-2}{2--1}$

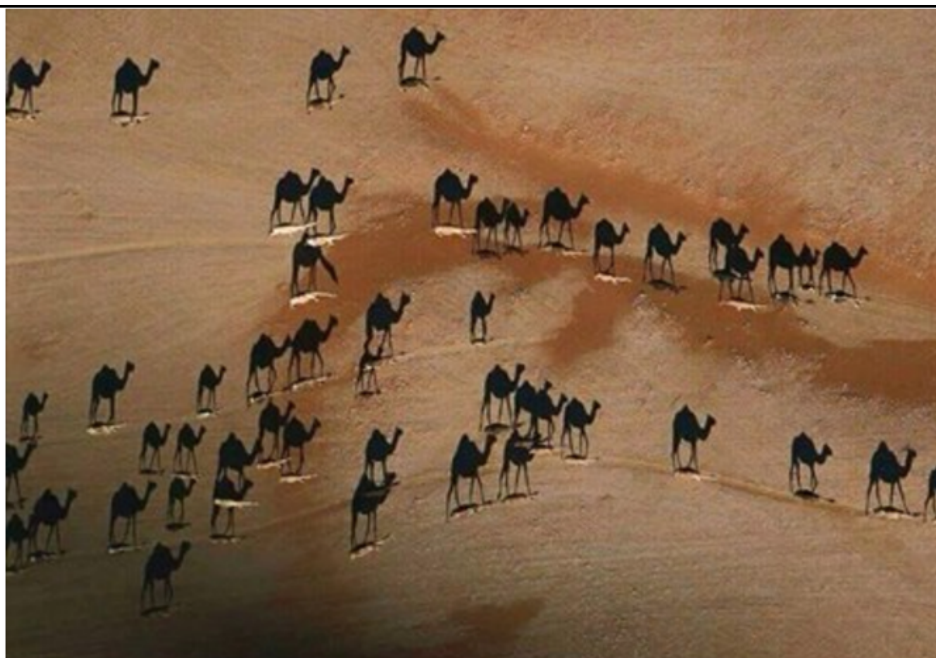
$m = \frac{6}{3} = 2$

$8 = 2(2) + b$

$8 = 4 + b$

$b = 4$

$y =$



This is a picture taken directly above these camels in the desert in Saudi Arabia during sunset. It is considered one of the best pictures of the year by National geographic. Look closely, the camels are the little white lines in the picture. The black you see

Questions
on
HW ?

38)

1998 8 G
increase by 1%

2010

$y = ab^x$

$100\% + 1\%$

101%

1.01

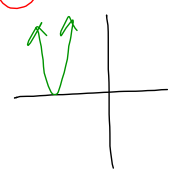
b) $y = 8(1.01)^{12}$

~~35b~~ ~~a~~

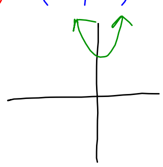
$$y^2-6y=0$$

31

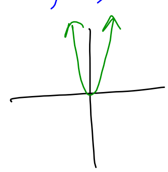
a $(-9,0)$



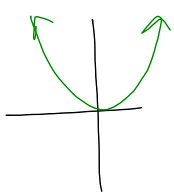
b $(0,7)$



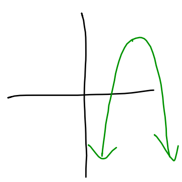
c $(0,0)$



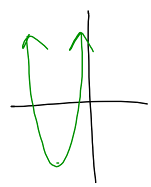
d $(1,0)$



e $(7,6)$



f $(-3,-8)$



$2x = 16$

e

Background - No Notes

Three forms of Quadratic Equations

standard form

$y = ax^2 + bx + c$

y-intercept

Example

$y = 3x^2 + 2x - 5$

graphing form

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

where (h, k) is the vertex

$y = 1(x+4)^2 - 6$

$(-4, -6)$ is the vertex

factored form

$y = 2(x-3)(x+7)$

$y = a(x+d)(x+e)$

x-intercepts are

$(-d, 0)$ and $(-e, 0)$

Each function form has its equation equivalent.

$3x^2 + 2x - 6 = 0$

$\frac{1}{2}(x-7)(x+2) = 0$

$(2x-3)^2 = 16$

Notes not needed

Today

Convert from standard form to graphing form by
COMPLETING THE SQUARE

$y = x^2 + 6x - 5$

$(x+3)(x+3)$

$y = (x+3)^2 - 14$

The technique:

$y = x^2 + 6x - 5 + 9$

divide in half

y-int $(0, -5)$

	x	3
x	x^2	$3x$
3	$3x$	9

$y + 9 =$ (box above) -5

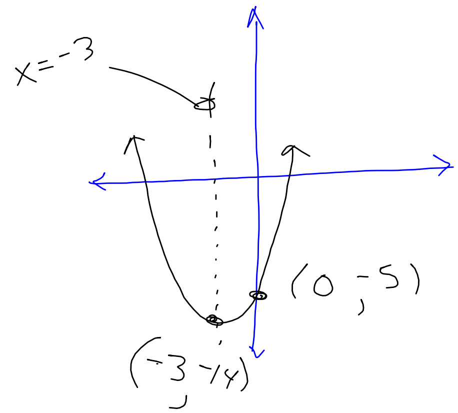
Vertex

$y + 9 = (x+3)^2 - 5$

$-9 \qquad\qquad -9$

Graphing form $y = (x+3)^2 - 14$

$(-3, -14)$ Vertex



The technique:

$$y = x^2 + 6x - 5$$

$y =$

	x	3
x	x^2	$3x$
3	$3x$	9

$-5 - 9$

Since $3x \cdot 3x = 9x^2$

$$y = (x+3)(x+3) - 14$$

$$y = (x+3)^2 - 14$$

graphing form

$\therefore$ Vertex $(-3, -14)$

ex. 2

Convert, find vertex, then sketch

$f(x) = x^2 - 4x + 9$

$\frac{-4x}{2} = -2x$

$f(x) + 4 =$

	x	-2
x	x^2	$-2x$
-2	$-2x$	4

$+ 9$

$-2x \cdot -2x = 4x^2$

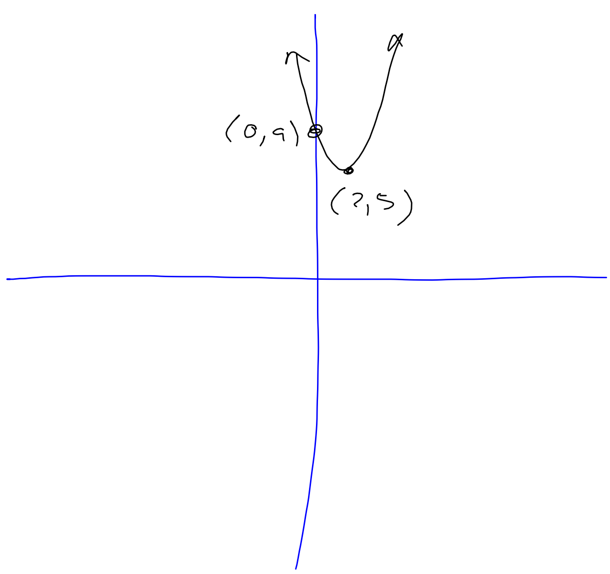
$f(x) + 4 = (x-2)^2 + 9$

$-4 \qquad\qquad\qquad -4$

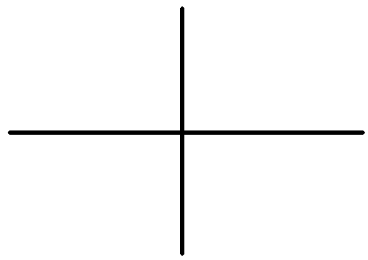
y-int $(0, 9)$

$f(x) = (x-2)^2 + 5$

Vertex $(2, 5)$



$f(x) = (x - 2)^2 + 5$



y-intercept ? axis of symmetry ?

ex. 3

$$-\frac{2x}{2} = -x$$

$y = x^2 - 2x - 15$

$y + 1 =$

	x	-1
x	x^2	$-x$
-1	$-x$	1

-15

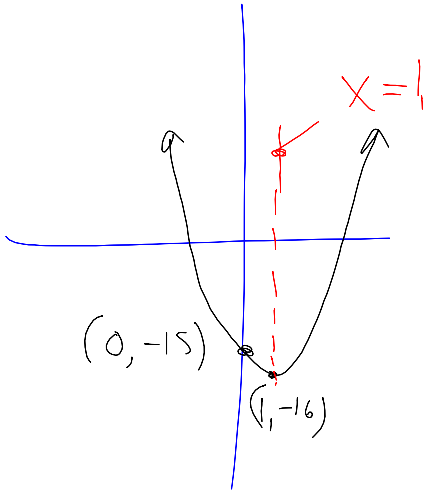
$$y + 1 = (x-1)^2 - 15$$
$$-1 \qquad\qquad -1$$

$$y = (x-1)^2 - 16$$

y-int $(0, -15)$

vertex $(1, -16)$

axis of symmetry $x = 1$



Use your graphing calculator to verify that they are equivalent

$y_1 = x^2 - 2x - 15$

$y_2 = (x-1)^2 - 16$

B.B.

notes: find the x-intercepts of a parabola when the x-intercepts really suck

$y = x^2 + 8x + 10$

$0 = x^2 + 8x + 10$

$a =$

$b =$

$c =$

$a = 1$

$b = 8$

$c = 10$

$$x = \frac{-(8) \pm \sqrt{(8)^2 - 4(1)(10)}}{2(1)}$$

$$x = \frac{-8 \pm \sqrt{24}}{2}$$

$x = -1.55$

$x = -6.45$

See your Exit Ticket

FYI

You won't always be told ahead of time when there will be an Exit Ticket.

Assignment

2- 50ac, 52, 53a, 55ab 56a

Mr. C $\longrightarrow$ pdf