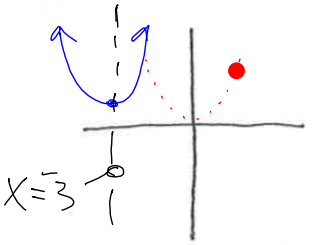
HW tally

Then Pick up and do the Warm Up (both sides)

LCQ (no calculator) later today

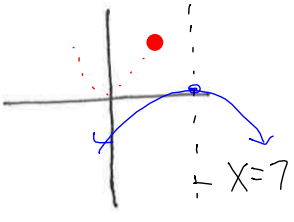
Without a GDC sketch the following parabolas. Then label the vertex. $y=x^2$ is already shown.

$y = (x+3)^2 + 1$



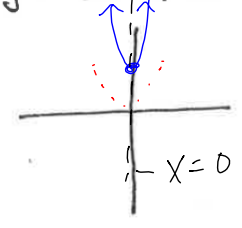
Vertex $(-3, 1)$

$y = -\frac{1}{2}(x-7)^2$



Vertex $(7, 0)$

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



Vertex $(0, 2)$

$y = x^2$

2. Go back to #1 and, with a dashed line, draw the line of symmetry and label with its equation.

3. Convert the following to graphing form

$y = x^2 + 8x + 6$

	x	4
x	x^2	$4x$
4	$4x$	16

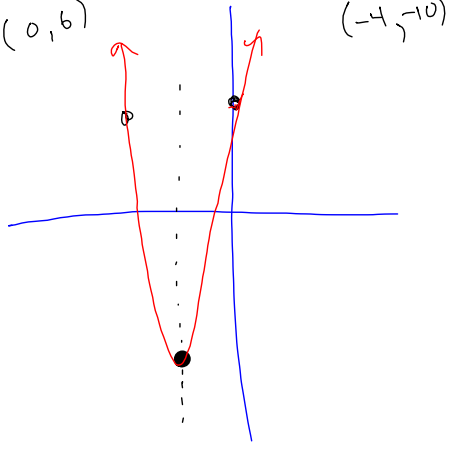
$y + 16 = (x+4)^2 + 6$

$-16 \quad\quad -16$

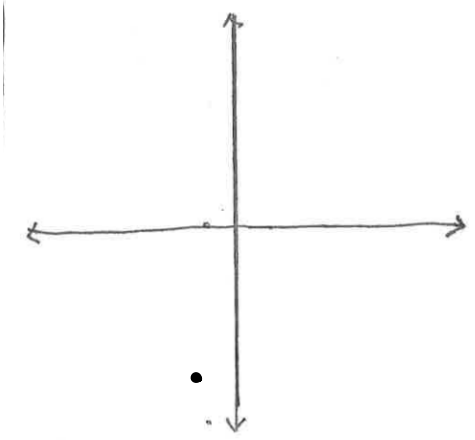
$y = (x+4)^2 - 10$

Vertex $(-4, -10)$

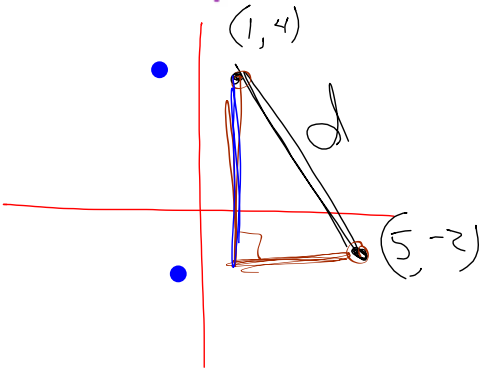
$(0, 6)$



4. Now make a sketch of the graph below. Be sure to figure out the y-intercept to help you.



(4) Find the distance between the two points (5, -2) and (1, 4)



$d^2 = (1-5)^2 + (4-(-2))^2$

$d = \sqrt{(1-5)^2 + (4+2)^2}$

$d = \sqrt{16 + 36}$

$= \sqrt{52} \approx 7.21$

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

$0 = x^2 + 2x + 4$

doesn't factor

Use QF.

$a = 1$

$b = 2$

$c = 4$

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

$x = \frac{-2 \pm \sqrt{-12}}{2}$

Protocol when checking HW

Keep your HW out so, if I walk around, I can look at it.

If you did not do it, I expect to see a **0** written on your recording sheet before I get to your desk.

Any questions on HW?

50 a

50 c

50 d

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

convert to graphing form (complete square)

53

(-2,4) (4,7)

eqution

d=

54) $4x^3 + 23x^2 - 2x = 0$

$x(4x^2 + 23x - 2) = 0$

$x = 0$

$4x^2 + 23x - 2 = 0$

$a = 4$
$b = 23$
$c = -2$

4 23 -2

$$x = \frac{-(23) \pm \sqrt{(23)^2 - 4(4)(-2)}}{2(4)}$$

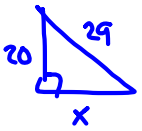
$$x = \frac{-23 \pm \sqrt{561}}{8}$$

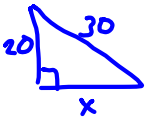
$x = 0$

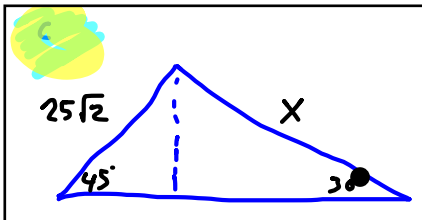
$x = \frac{-23 + \sqrt{561}}{8} \approx$

$x = \frac{-23 - \sqrt{561}}{8} \approx$

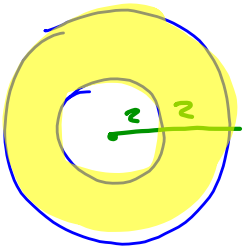
55

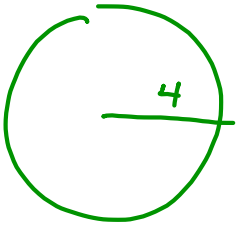






56a





$A = \pi \cdot 4^2$

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So, far we have two ways of starting from standard form

$$f(x) = ax^2+bx+c$$

and converting to graphing form

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

Finding the x-intercepts and averaging them

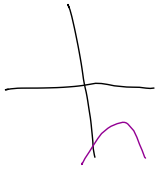
complete the Square to Convert

Aim Today:

To see advantages & disadvantages of each

- To become proficient with both.

When does the method of completing the square work better?



When does the method of averaging x-intercepts work better?

$a \neq 1$

NOTES: Convert $y = x^2 + 5x + 2$ using Completing the Square

Complete the Square when $a \neq 1$

$y = 2x^2 - 16x + 5$

must be 1 to complete the square

$\frac{y}{2} = x^2 - 8x + \frac{5}{2}$

	x	-4
x	x^2	$-4x$
-4	$-4x$	16

$\frac{y}{2} + 16 = (x-4)^2 + \frac{5}{2}$

multiply by 2

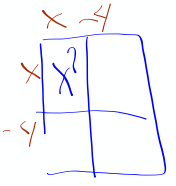
$y + 32 = 2(x-4)^2 + 5$

$y = 2(x-4)^2 - 27$

$y = 2x^2 + 16x + 5$

$y + 32 = 2\left[x^2 + 8x + 16\right] + 5$

$y + 32 = 2(x + 4)^2 + 5$



BB

New function $y = (x-3)^2 - 25$

Without a GDC:

a) Find the vertex (,)

b) Find all x-intercepts ..... but don't get too far

(x-int, 0) $0 = (x-3)^2 - 25$

X-Intercepts algebraically $y = (x-3)^2 - 25$

$0 = (x-3)^2 - 25$

did anyone .....

$0 = (x-3)(x-3) - 25$

$0 = x^2 - 3x - 3x + 9 - 25$

$0 = x^2 - 6x - 16$

etc

Instead...

$0 = (x-3)^2 - 25$

$\sqrt{(x-3)^2} = \sqrt{25}$

$x^2 = 25$

$x - 3 = \pm 5$

$x - 3 = 5$ $\quad$ $x - 3 = -5$

$+3 \quad +3$

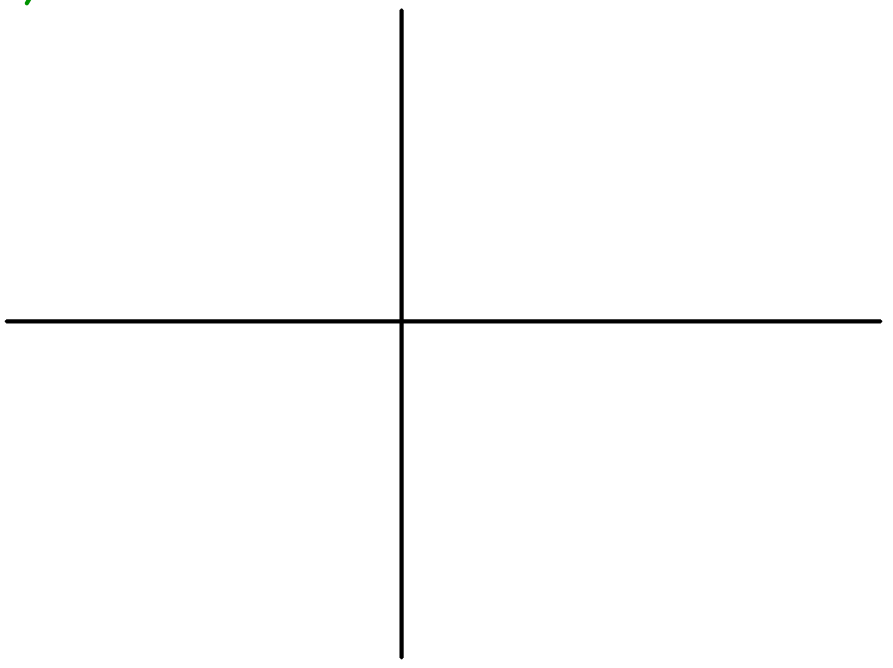
$x = 8$ $\quad$ $x = -2$

x-intercepts $(8, 0)$ and $(-2, 0)$

Make a sketch and label with exact x- and y-intercepts

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

y-int $(0, -16)$ Vertex $(-5, -8)$



LCQ

Assignment

2-... 50bd , 59-63