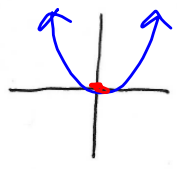
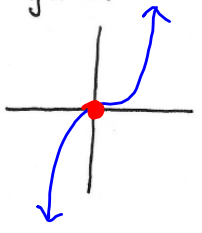
HW Tally

Pick up the Warm Up

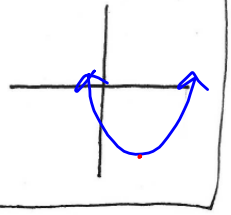
sketch $y = x^2$



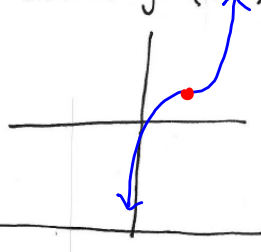
sketch $y = x^3$



sketch $y = (x-3)^2 - 8$



sketch $y = (x-3)^3 + 1$



(2) Write each expression in simpler rad

$2\sqrt{x} + 3\sqrt{y} + 6\sqrt{x} + 1\sqrt{y} = 8\sqrt{x} + 4\sqrt{y}$

$(3\sqrt{5})^2 = 3^2 \cdot \sqrt{5}^2 = 9 \cdot 5 = 45$

$\frac{\sqrt{72}}{\sqrt{2}} = \sqrt{\frac{72}{2}} = \sqrt{36} = 6$

$\sqrt{\frac{5}{16}} = \frac{\sqrt{5}}{\sqrt{16}} = \frac{\sqrt{5}}{4}$

(3) Russell Wilson was trying to use the x-intercept method to rewrite the parabola $y = x^2 + 10x + 16$ to graphing form. Finish what he started.

$0 = x^2 + 10x + 16$

$0 = (x+8)(x+2)$

$x+8=0 \quad x+2=0$

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

x-intercepts

$\text{Avg} = \frac{-8+(-2)}{2} = -5$

Vertex $(-5, -9)$

$y = x^2$

$y = (-5)^2 - 10(-5) + 16$

$25 + 50 + 16$

$= -9$

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

(4) Use the completing the Square method to check the result in #3

$y = x^2 - 10x + 16$

$y + 25 = (x-5)^2 + 16$
$\quad -25 \qquad\qquad -25$

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

$y + 25 = \begin{array}{c|cc} & x & -5 \\ \hline x & x^2 & -5x \\ \hline -5 & -5x & 25 \end{array} + 16$

$\left(\frac{b}{2}\right)^2$

$\left(\frac{-10}{2}\right)^2 = 25$

$y + 25 = (x-5)^2 + 16$
$\quad -25 \qquad\qquad -25$

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

What would it look like without the box ?

$y = x^2 - 10x + 16$

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

$\left(\frac{-10}{2}\right)^2 = 25$

$y + 25 = (x-5)^2 + 16$
$\quad -25 \qquad\qquad -25$

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

You have taken 5 LCQ's. Once we get to 6, a second LCQ will be dropped.

LCQ 3 MAX:16.00 PTS:10.00 12/17/2018	LCQ 2 MAX:9.00 PTS:9.00 12/11/2018	LCQ 1 MAX:5.00 PTS:10.00 12/10/2018
LCQ's	LCQ's	LCQ's
14	6	5
0 d	3	1
15	6 d	5
15 d	9	5
14	9	3
14	7 d	5
13	5 d	5
9	5	1 d

HW Questions .

Just pick up the solutions and check

& learn !

72a) exponential equation

(2, 9) (4, 324)

$y = ab^x$ $y = ab^x$

$ab^2 = 9$ $ab^4 = 324$

$a = \frac{9}{b^2}$

$\frac{ab^4}{ab^2} = \frac{324}{9}$

$b^2 = 36$

double substitution

$\frac{9}{b^2} \cdot b^4 b^2 = 324$

$9b^2 = 324$

$y = (6)^x$

(1) (2) (3) (4) 9 r r 324

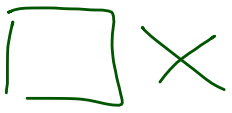
$9 \cdot r \cdot r = 324$

73a $y = 2x^2 + 3x - 5$

Find x and y intercepts

x-inter $2x^2 + 3x - 5 = 0$

$y = 0$



(b) $y = \sqrt{2x - 4}$

91a $\sqrt{x} + \sqrt{y} + 5\sqrt{x} + 2\sqrt{y}$

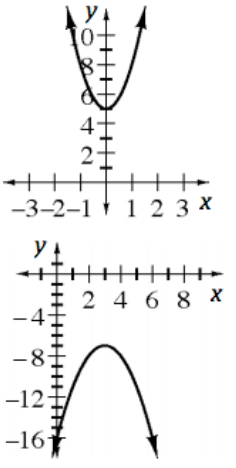
$\sqrt{x} + 5\sqrt{x} + \sqrt{y} + 2\sqrt{y}$

b $(2\sqrt{8})^2$

2-74. See graphs at right.

a: stretched parabola, vertex (0, 5)

b: inverted parabola, vertex (3, –7)



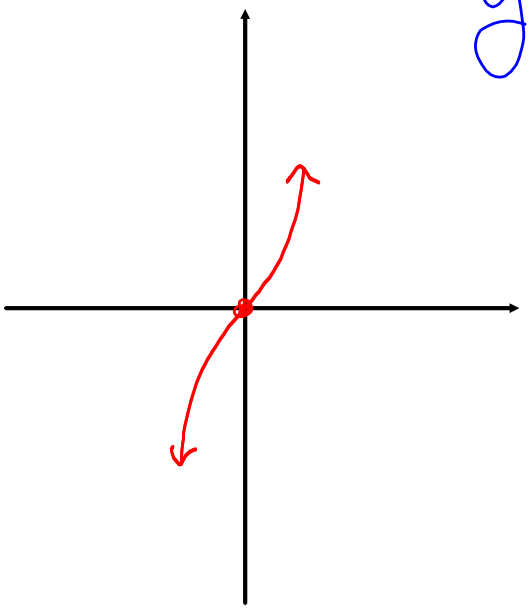
2-75. **a:** $x = \pm 5$ **b:** $x = \pm \sqrt{11}$

date for the Ch. 2 Test:

Thursday, January 31

last class

$y = x^3$



GOAL:

Transform any function

TODAY'S AIM: 2 New parents

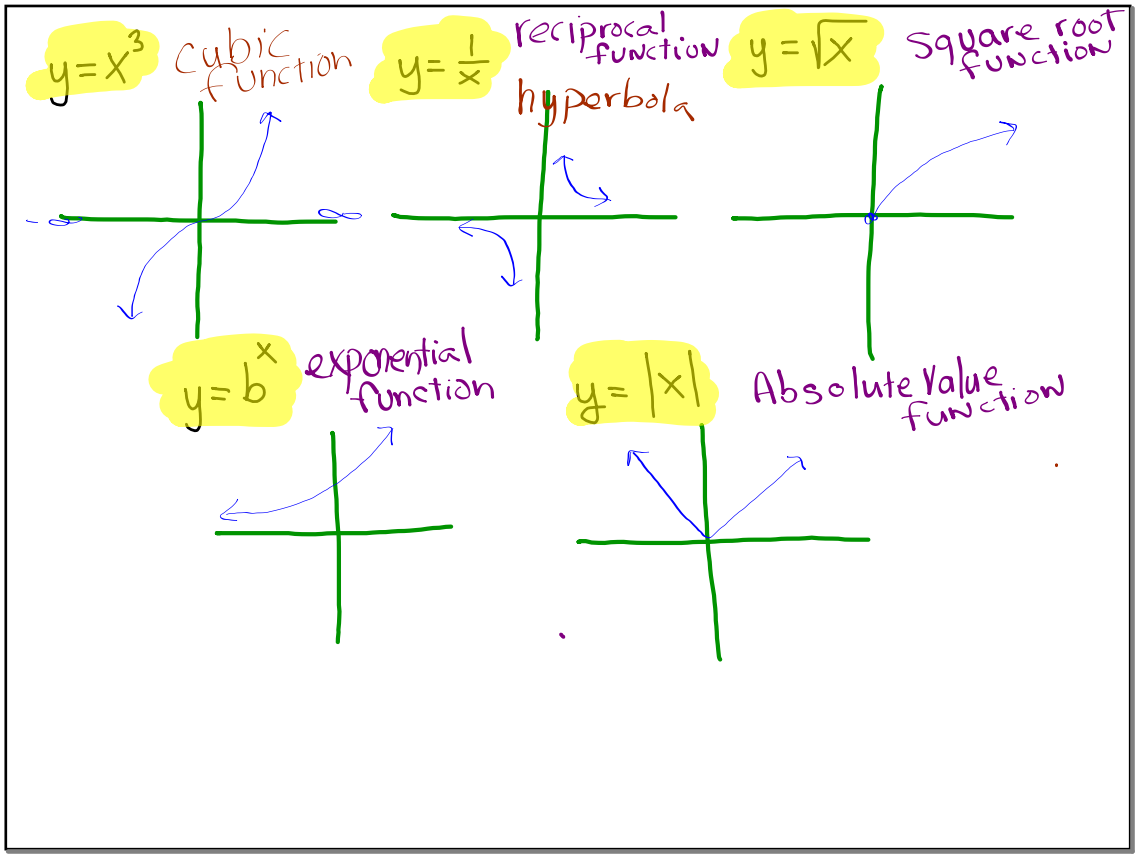
$y = x$ $y = x^2$ $y = x^3$

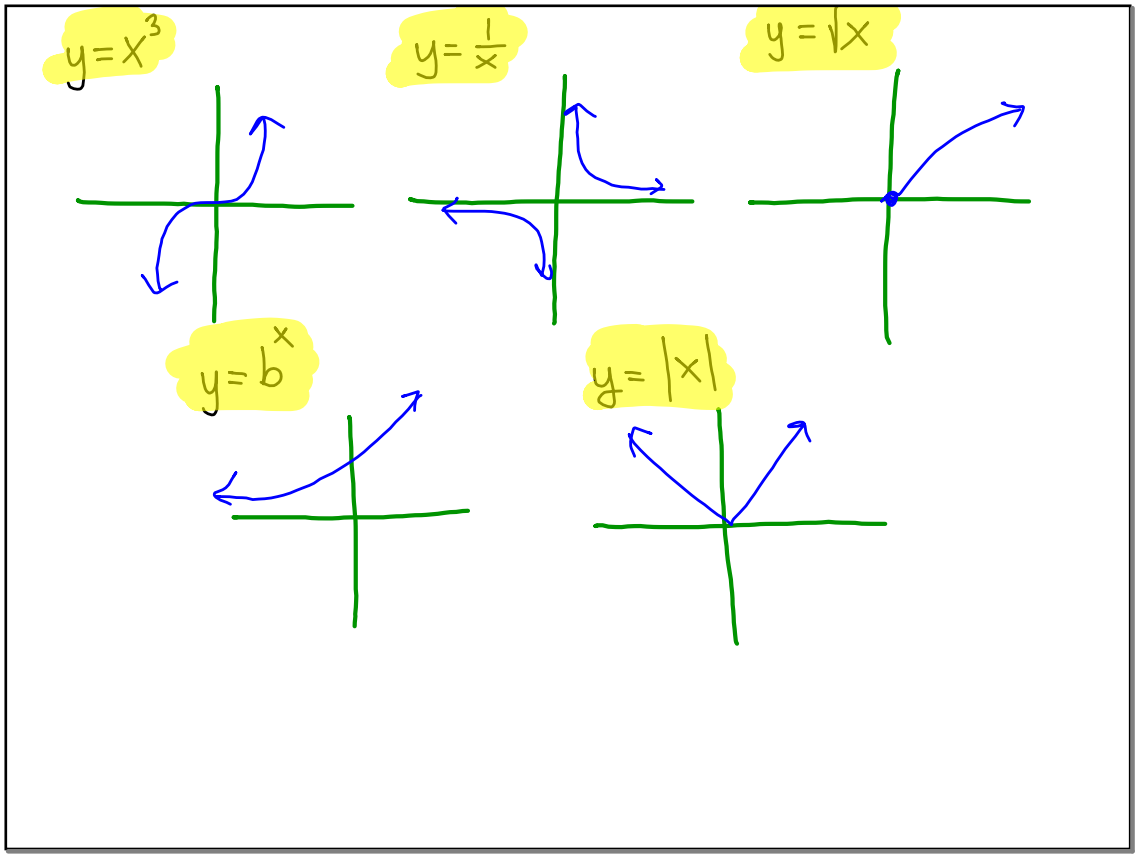
but first.....

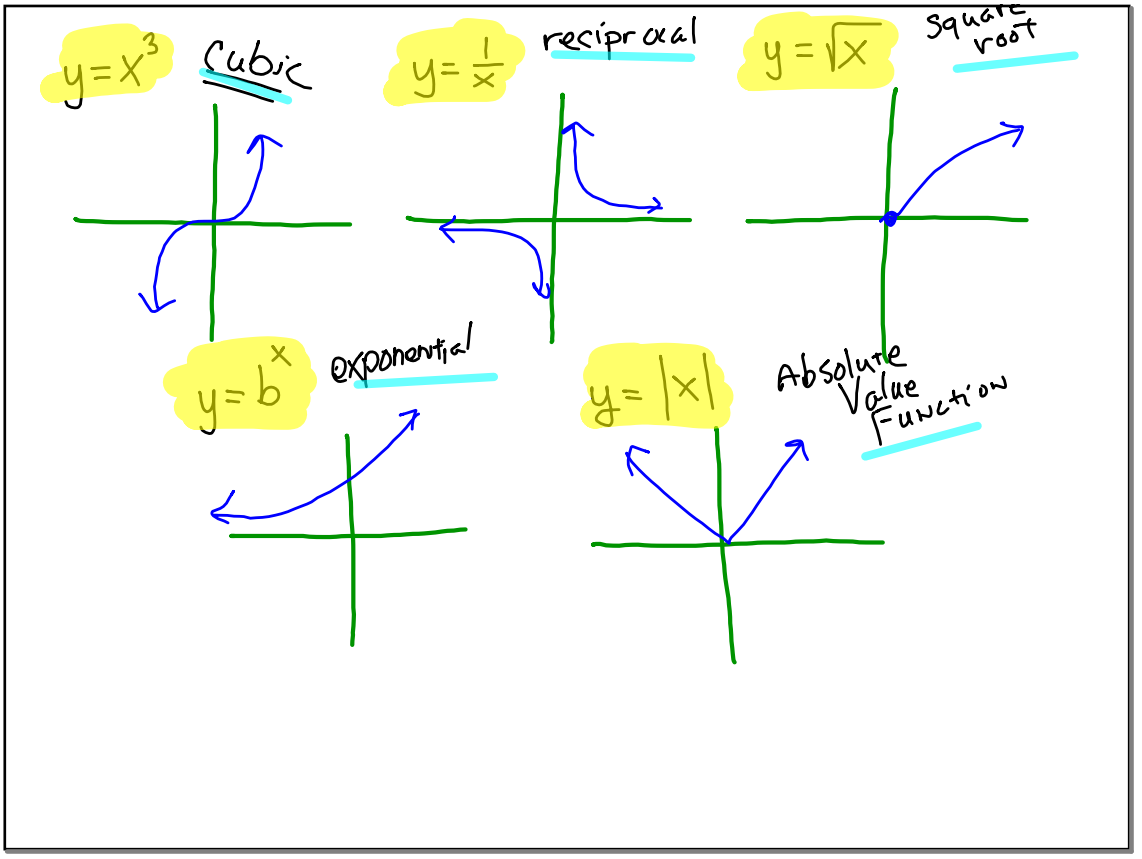
Let's write down the 5 parent functions from this chapter.

QUICK Sketch of 5 New Parents

NOTES


$y=x^3$
cubic function
$y=\frac{1}{x}$
reciprocal function
hyperbola
$y=\sqrt{x}$
square root function
$y=b^x$
exponential function
$y=|x|$
Absolute Value function


$y=x^3$
$y=\frac{1}{x}$
$y=\sqrt{x}$
$y=b^x$
$y=|x|$



With your side partner discuss the Domain of each

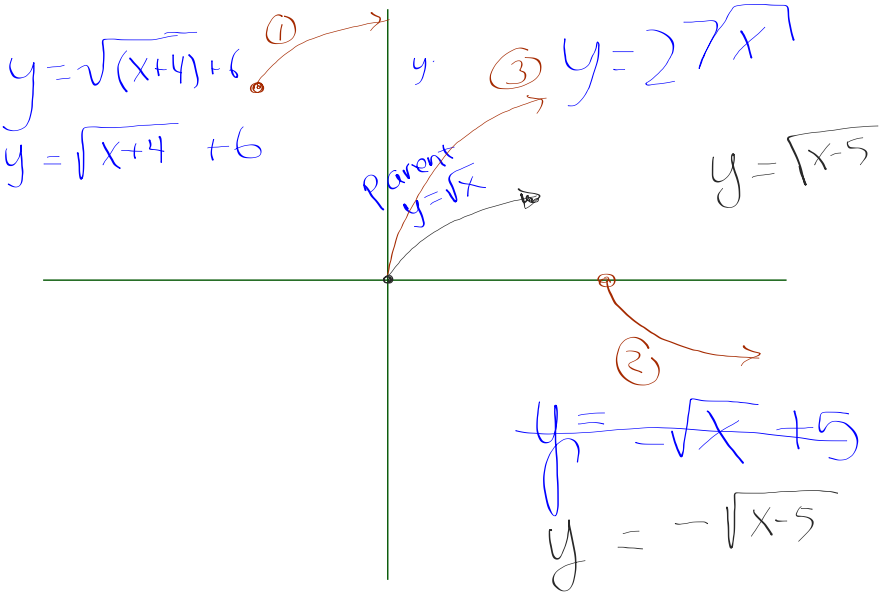
(don't need to write down)

Now the range of each

You are about to make transformations with each function

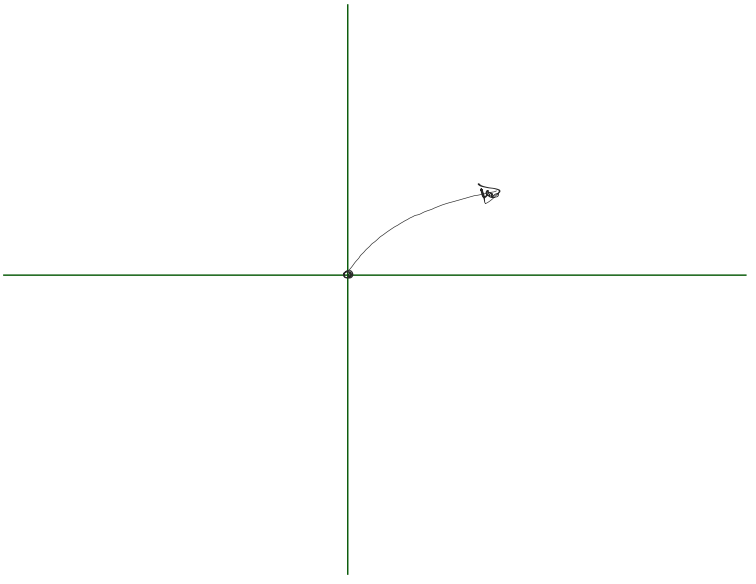
1. Sketch first
2. Next to each sketch, write the function

[Think first..... GDC later if you need it at all]



Perform each transformation, all on the same large sketch.

1. **Translate 4 left, up 6**
2. **Translate 5 right with negative orientation.**
3. **Vertical Stretch by 2**



4. DOWN 30, left 800
vertically compressed by $\frac{1}{3}$

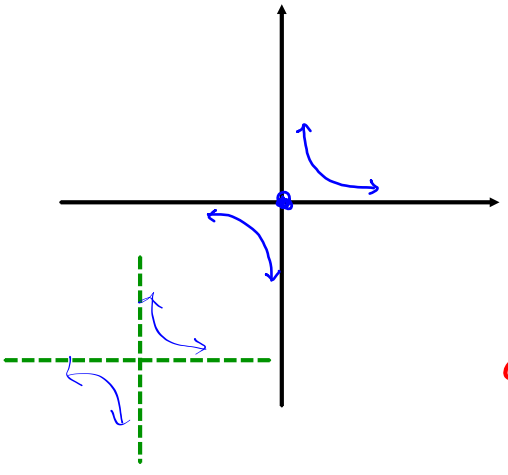
but you don't have to sketch

$$y = \frac{1}{3}\sqrt{x+800} - 30$$

Next

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

CAUTION ! Shifts of $y = \frac{1}{x}$



don't extend transformation

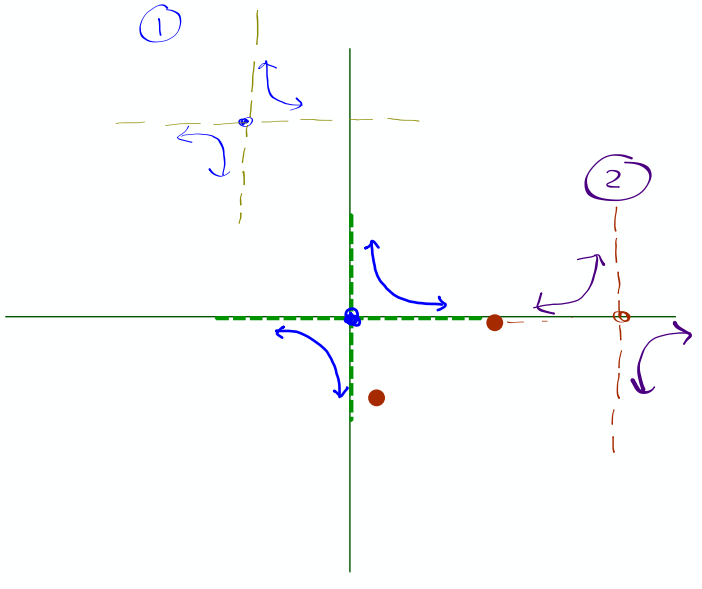
1. Translate 4 left, up 6 $y = \frac{1}{x+4} + 6$

2. Translate 5 right with negative orientation. $y = \frac{-1}{x-5}$ $y = -\left(\frac{1}{x-5}\right)$

3. Down 500, ~~down~~ right 67, vertically stretched by 9 } don't have to sketch

$y = \frac{9}{1}\left(\frac{1}{x-67}\right) - 500$

$y = \frac{9}{x-67} - 500$



in your NOTES

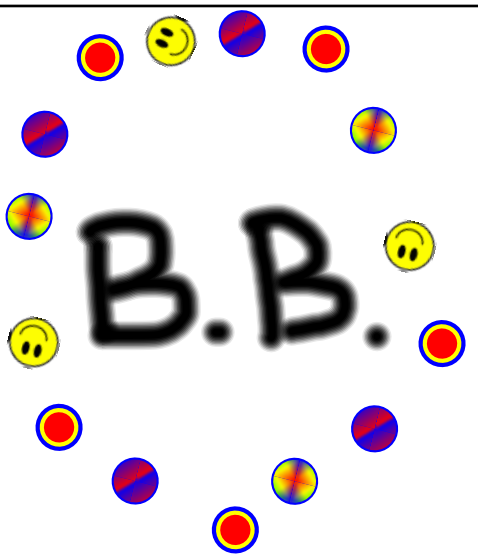
One *general* way of writing an equation for a **parabola** is to use graphing form:

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

With your group, write the general equation for both of today's functions below your graphs

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

$y = \frac{1}{x}$ $\quad y = a(x-h)^{-1} + k$ $\quad y = a\cdot\frac{1}{x-h} + k$



See your LCQ

Assignment:

2 - 81-82, 84bd, 85, 86ac, 88, 90,92