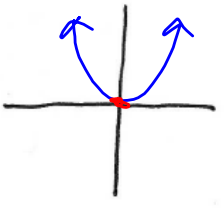
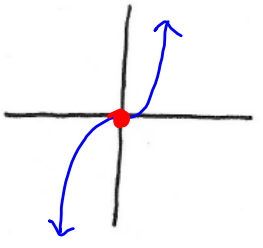
HW Tally

Pick up the Warm Up

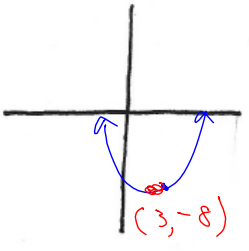
sketch $y = x^2$



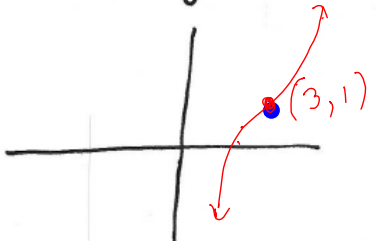
sketch $y = x^3$



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



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



(2) Write each expression in simpler rad

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

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

$\sqrt{5}\cdot\sqrt{5}$

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

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

(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.

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

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

2 PP

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

$x = 8 \quad x = 2$

two x-intercepts

$x = \frac{8+2}{2}$

$= 5$

$\frac{\square + \square}{2} =$

Vertex $(5, -9)$

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

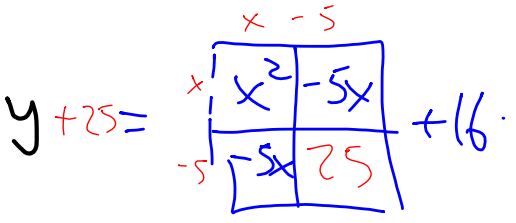
$25 - 50 + 16$

$= -9$

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

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

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



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

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

HW Questions

72a) exponential equation

(2, 9) (4, 324)

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

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

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

$b^2 = 36$ $b = 6$

double substitution

$a(6)^2 = 9$

$36a = 9$

$a = \frac{9}{36} = \frac{1}{4}$

$y = \frac{1}{4}(6)^x$

$\underline{\quad} \; \underset{①}{\underline{\quad}} \; \underset{②}{\underline{9}} \; \underset{③}{\underline{\quad}} \; \underset{④}{\underline{324}}$ $\quad r \cdot r$

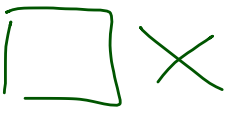
$9 \cdot r \cdot r = 324$

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

Find x and y intercepts

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

$y = 0$



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

y-int $(0, y)$

$y = \sqrt{2(0)-4}$

$= \sqrt{-4}$

So... no y-int.

x-intercept(s) $(x, 0)$

$\left(\sqrt{2x-4}\right)^2 = (0)^2$

$2x - 4 = 0$

$x = 2$

$(2, 0)$

9 | a $\sqrt{x} + \sqrt{y} + 5\sqrt{x} + 2\sqrt{y}$

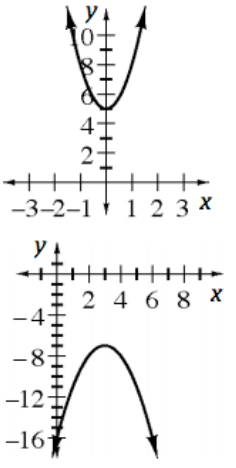
$\sqrt{x} + 5\sqrt{x} + \sqrt{y} + 2\sqrt{y}$

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

2-74. See graphs at right.

a: stretched parabola, vertex (0, 5)

b: inverted parabola, vertex (3, –7)



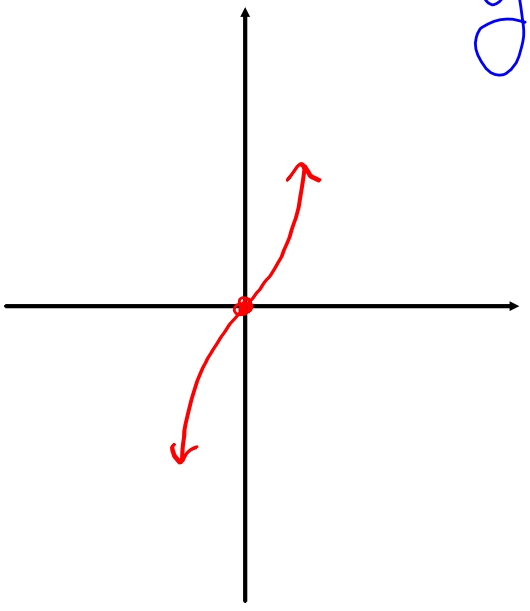
2-75. **a:** $x = \pm 5$ **b:** $x = \pm \sqrt{11}$

date for the Ch. 2 Test:

Friday, October 20th

last class

$y = x^3$



GOAL:

Transform any function

using same techniques

TODAY'S AIM: 2 New parents

QUICK Sketch of 5 New Parents

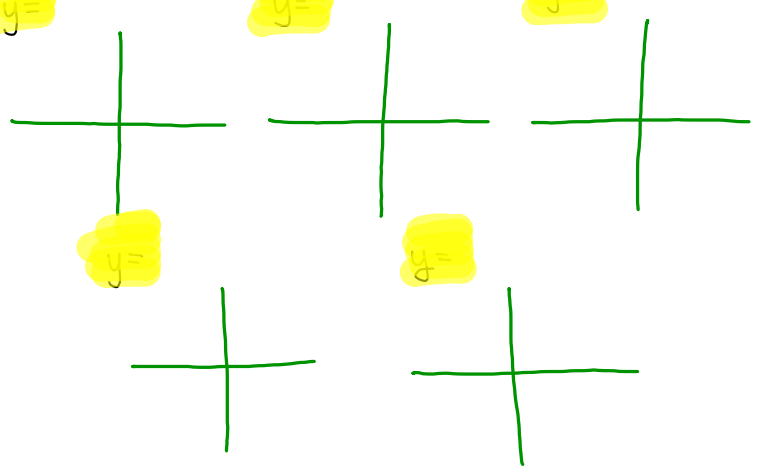
y=

y=

y=

y=

y=



$y = x^3$

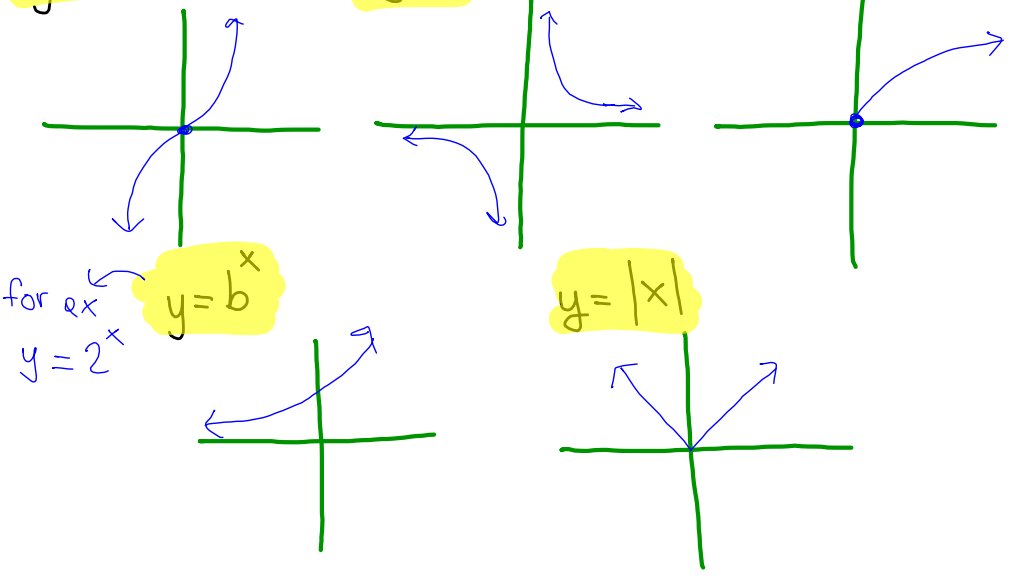
$y = \frac{1}{x}$

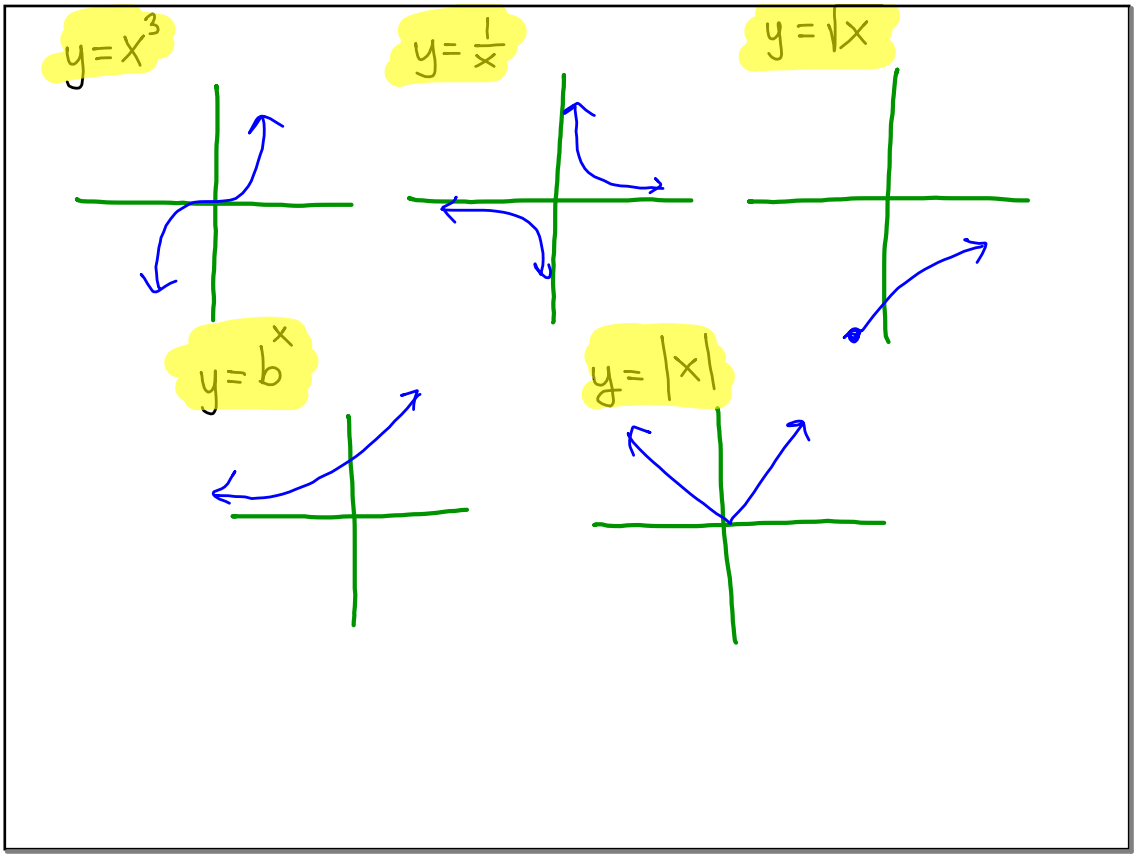
$y = \sqrt{x}$

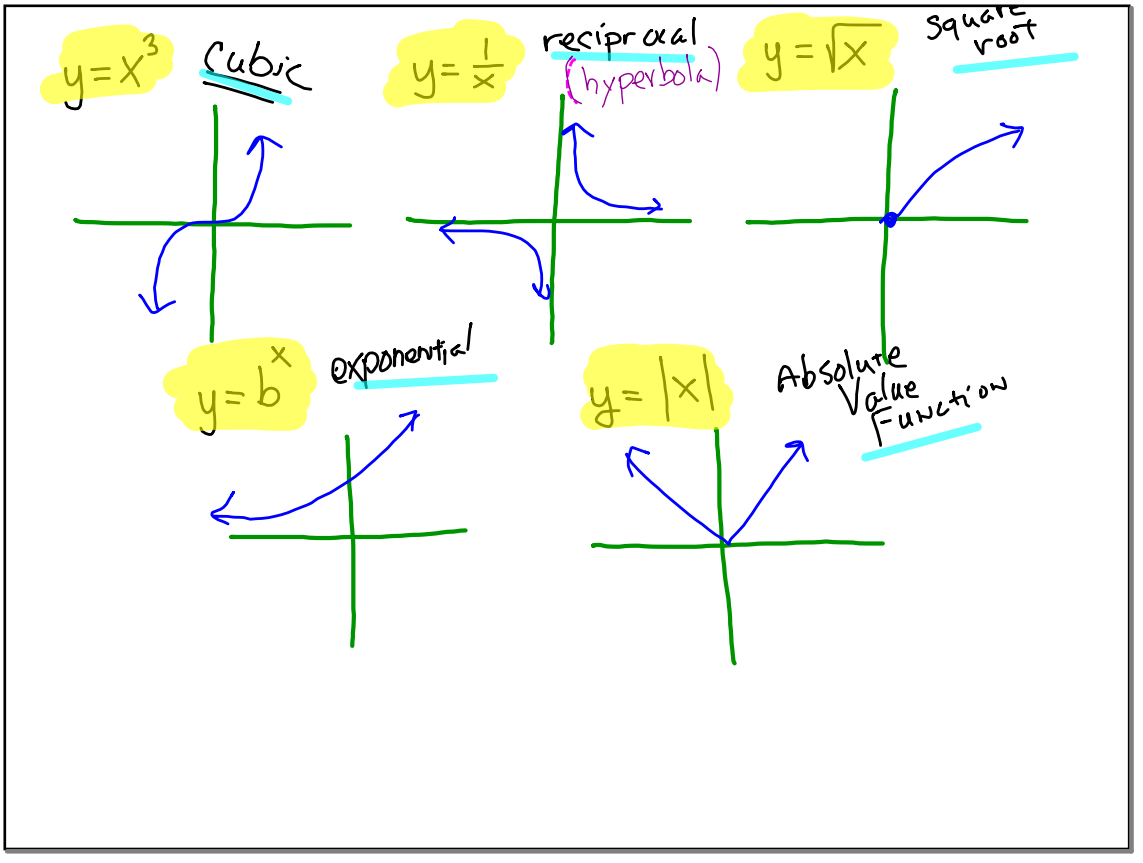
for ex $y = 2^x$

$y = b^x$

$y = |x|$




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


$y=x^3$
Cubic
$y=\frac{1}{x}$
reciprocal
(hyperbola)
$y=\sqrt{x}$
square root
$y=b^x$
exponential
$y=|x|$
Absolute Value Function

at the moment we'll focus on two of them.

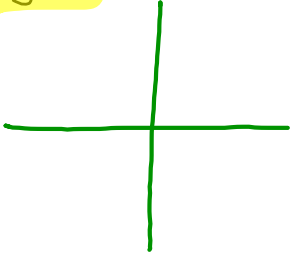
You need to be in pairs

Each person needs a Pre-made graph for this activity

In your Pairs

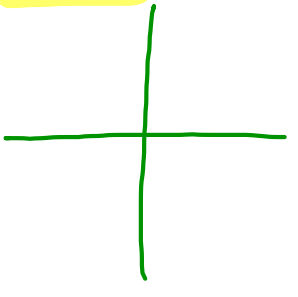
One of you ....

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



The other....

$y = \sqrt{x}$



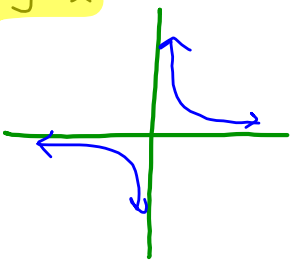
Each of you:

I. Graph your equation on a graph paper given to you (you can tape them into your notes later)

II. Share your results. Make a quick sketch of the other person's graph on your paper.

III. Work together to write down the **domain** and **range** of both functions.

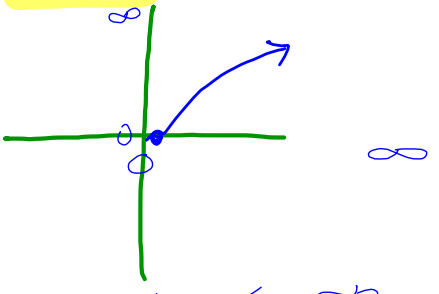
$y = \frac{1}{x}$ reciprocal



D: $-\infty < x < \infty, x \neq 0$

R: $-\infty < y < \infty, y \neq 0$

$y = \sqrt{x}$ square root



D: $0 \leq x < \infty$

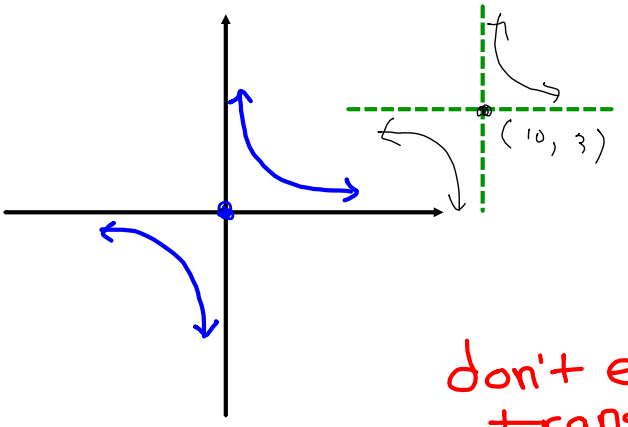
R: $0 \leq y < \infty$

You are about to make transformations with

YOUR function

but careful when you do $y = \frac{1}{x}$

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



don't extend transformation

Find and graph the following tranformation for your function

vertical shift up, 4 units

a) Next to the graph, write it's equation

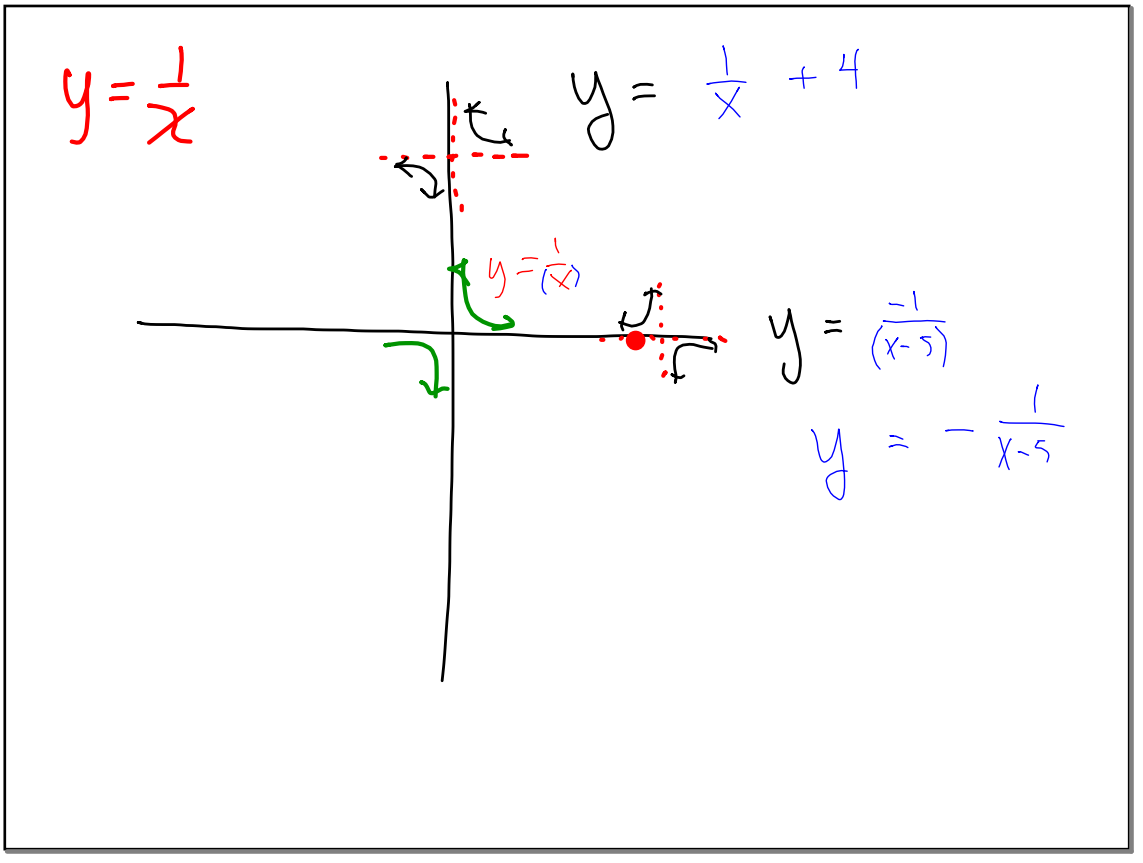
b) When finished, copy the results from your partner on to your paper.

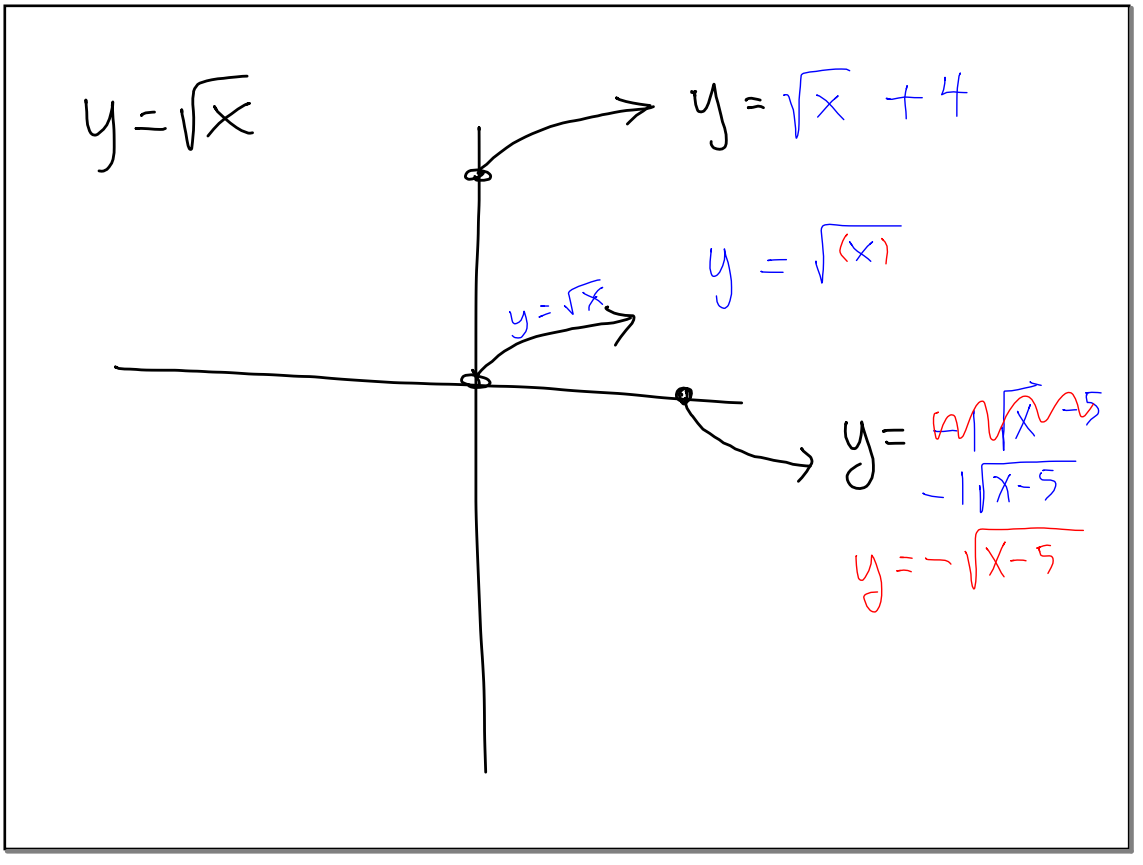
Next transformation

Horizontal shift right, 5 units & with negative orientation

a) Next to the graph, write it's equation

b) When finished, copy the results from your partner


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


$y = \sqrt{x}$
$y = \sqrt{x} + 4$
$y = \sqrt{(x)}$
$y = \sqrt{x}$
$y = \sqrt{x-5}$
$-1\sqrt{x-5}$
$y = -\sqrt{x-5}$

c) vertical stretch by a factor of 2

$y = \sqrt{x}$

$y = 2\sqrt{x}$

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

$= 2\left(\frac{1}{x}\right)$ $y = \frac{2}{x}$

$2 \cdot \frac{1}{x}$

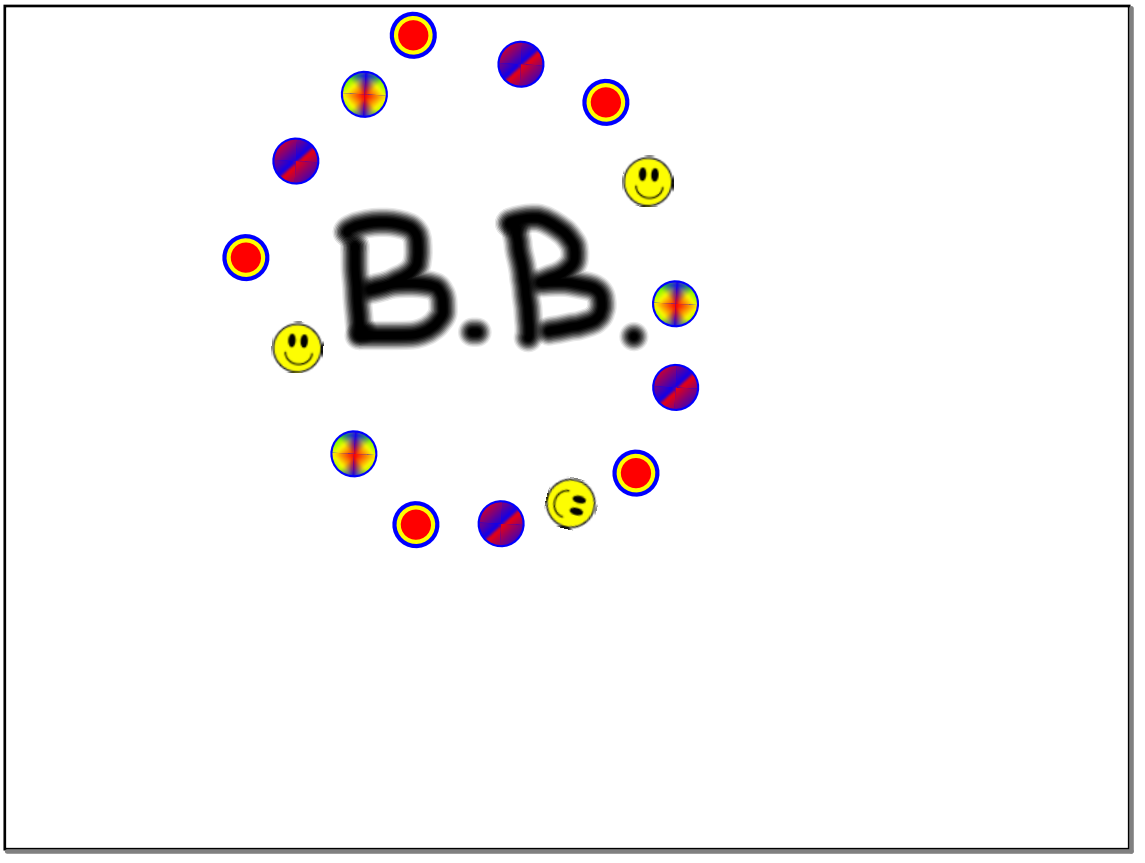
One *general* way of writing an equation for a **parabola** is to use graphing form:

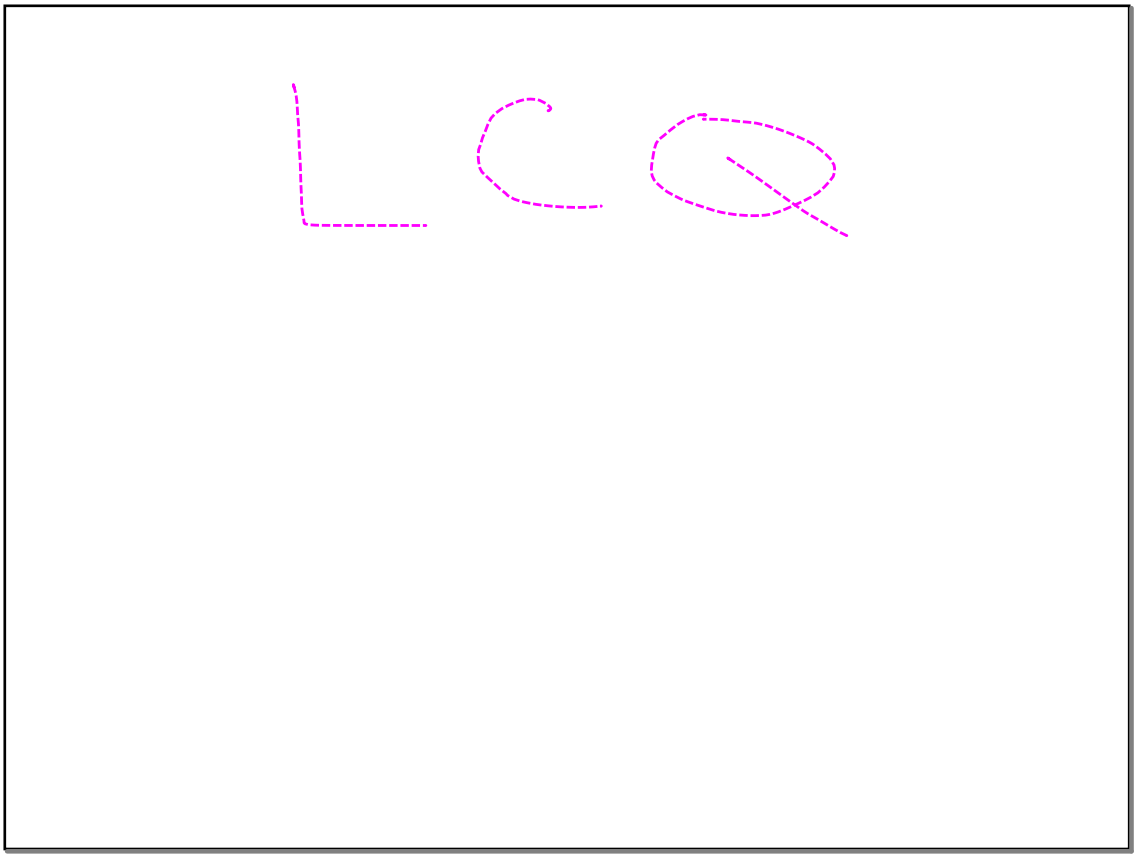
$y = x^2$ $y = a(x-h)^2 + k$

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

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

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


B.B.


LCQ

Assignment:

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

If you are celebrating the Yom Kippur holiday, let me know

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