Do the Warm Up

front side only

also pick up the ch.2 test info sheet.

① Factor $n^2 - 49$ (HINT: use difference of squares) $= (n+7)(n-7)$

Factor $16x^2 - 25 = (4x+5)(4x-5)$

② What is the parent function of $y = (x-3)^2 + 6$ $y = x^2$

" " " " " " $y = 5\sqrt{x+1} - 7$ $y = \sqrt{x}$

" " " " " " $y = 2\left(\frac{1}{x+10}\right) - 18$ $y = \frac{1}{x}$

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

	Parent	Transformation
a)	$y = \|(x)\|$	$y = 7\|x+20\| - 11$
b)	$y = \frac{1}{(x)}$	$y = 7\left(\frac{1}{x+20}\right) - 11$
c)	$y = 3^{(x)}$	$y = 7(3)^{x+20} - 11$

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

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

Aim Analyze Transformations of the 5 Parent Functions

and previous functions

brainstorm

all of the function types you can think of

lines

parabolas

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

cubics

square root

exponentials

absolute value

Function Familiarity

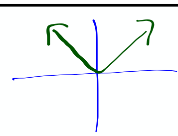
recognition test !!!

NOT a real test

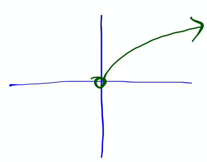
I give you the function,

you sketch

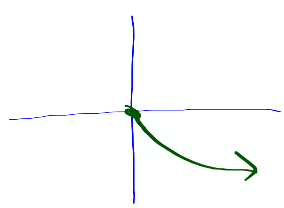
$y = |x|$



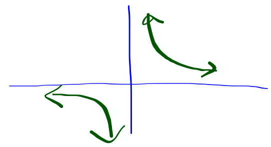
$y = \sqrt{x}$



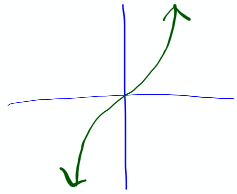
$y = -\sqrt{x}$



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

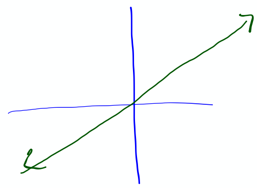


$y = x^3$



$y = x + 0$

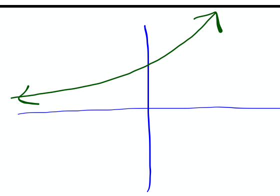
$y = x$



$y = x + 2$

$y = x - 5$

$y = 4^x$



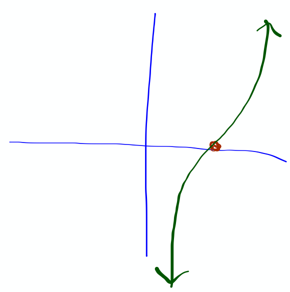
$y = 2^x$

$y = 3^x$

$y = 5^x$

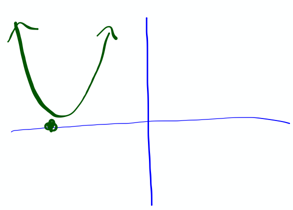
$y = \cancel{x^3}\ (x-2)^3$

$y = x^3$



$y = (x+17)^2$

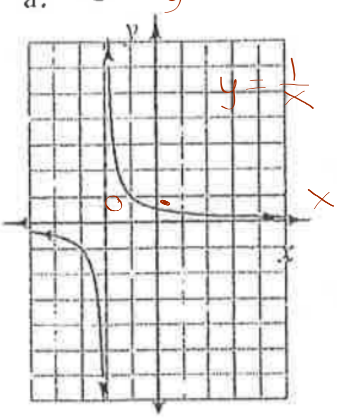
$y = x^2$



back side of Warm Up

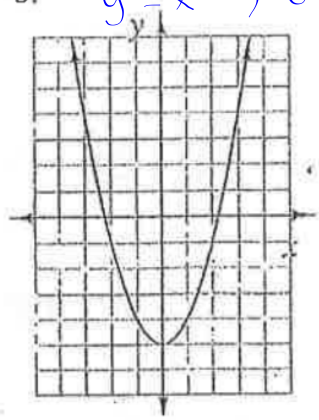
1. Identify the parent function shown on the graph
2. Find the locator point of the graph shown.
3. Write the function that matches the transformation shown.

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

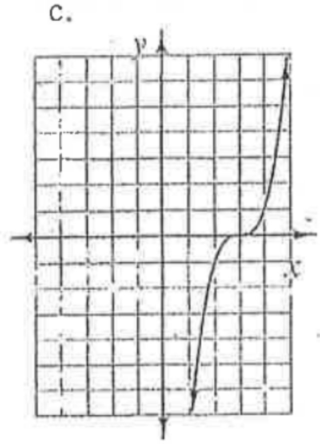


b. $y = (x)^2 - 5$

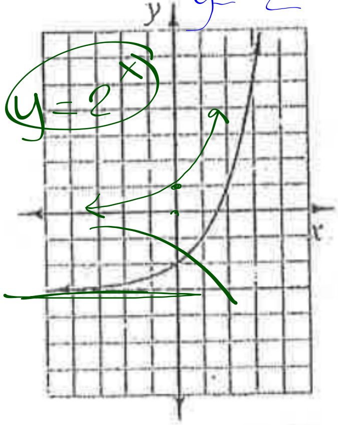
$y = x^2 - 5$



c. $y = (x-3)^3$



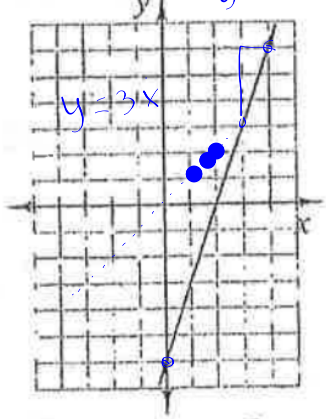
d.



$y = -2^x$

$y = 2^x - 3$

e.

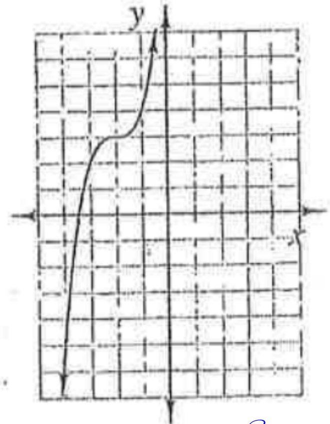


$y = -$

$y = 3(x-2)$

$y = 3x - 6$

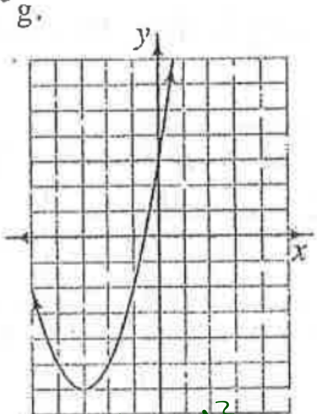
f.



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

$y =$

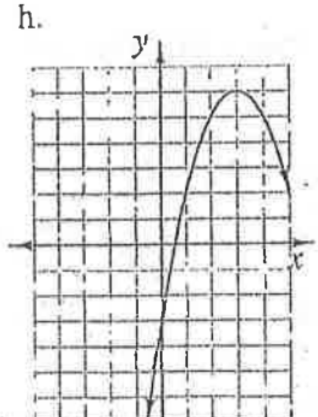
g.



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

$y = -$

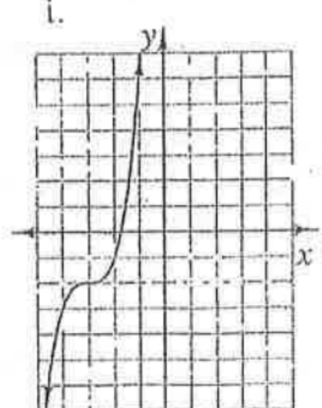
h.



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

$y =$

i.



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

let's go back and look at the

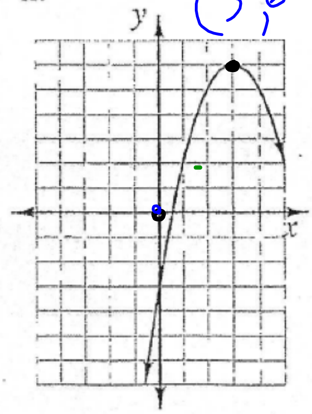
Significance of

(h,k)

The locator point on the graph is the point (h,k) for almost all functions.

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

h.



$(3, 6)$

Parabola

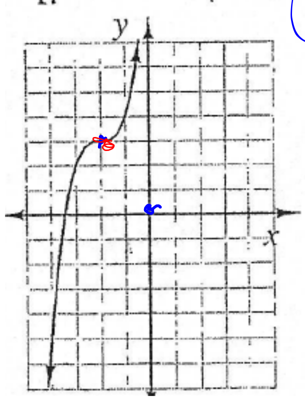
$y = x^2$

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

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

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

f.



$(-2, 3)$

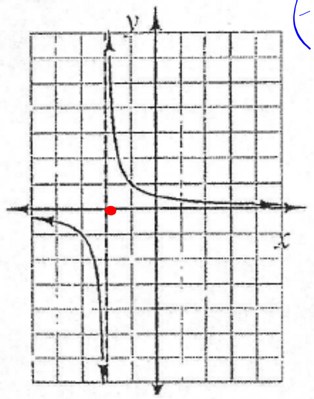
Cubic

$y = x^3$

$y = a(x-h)^3 + k$

The locator point (h, k) is at the inflection point.

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



$(-2, 0)$

Hyperbola

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

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

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

Parent

$y =$

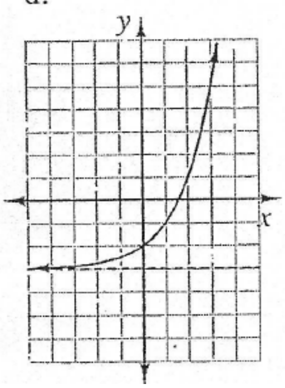
General (with h, k)

$y =$

Parent	General (with h,k)
$y = \lvert x \rvert$	$y = a\lvert x-h \rvert + k$
$y = 5^x$	$y = a(5)^{x-h} + k$

$y = 2^x - 3$

d.



Exponential

$$y = 2^x$$

$$y = a \cdot 2^{x-h} + k$$

The locator point (h, k) is ?????

BB

Two Tough Problems

① Complete the square to convert $y = 3x^2 + 2x + 10$ to graphing form.

$$\frac{y}{3} = x^2 + \frac{2}{3}x + \frac{10}{3}$$

$$\frac{y}{3} + \frac{1}{9} =$$

	x	$\frac{1}{3}$
x	x^2	$\frac{1}{3}x$
$\frac{1}{3}$	$\frac{1}{3}x$	$\frac{1}{9}$

$$+ \frac{10}{3}$$

$$\frac{y}{3} + \frac{1}{9} = \left(x + \frac{1}{3}\right)^2 + \frac{10}{3}$$

multiply by 9

$$3y + 1 = 9\left(x + \frac{1}{3}\right)^2 + 30$$
$$-1$$

$$\frac{3y = 9\left(x + \frac{1}{3}\right)^2 + 29}{3}$$

$$y = 3\left(x + \frac{1}{3}\right)^2 + \frac{29}{3}$$

Vertex $\left(-\frac{1}{3}, \frac{29}{3}\right)$

$$\frac{1}{3}x \cdot \frac{1}{3}x = \frac{1}{9}x^2$$

$\frac{1}{8} \cdot \frac{8}{3}$ $\frac{2}{6}$

dropped LCQ

1 of 8 - LCQ (Convert a parabola

LCQ (Convert a parabola from MAX:12.00 PTS:10.00 10/12/2017 LCQ's	LCQ (Sketch Parabolas in MAX:12.00 PTS:10.00 10/12/2017 LCQ's	Quiz on Sequences and MAX:28.00 PTS:30.00 10/4/2017 Tests	LCQ Sequences MAX:14.00 PTS:10.00 10/3/2017 LCQ's	HW for Sequences (9/22 MAX:60.00 PTS:60.00 9/29/2017 Coursework
7 d	12	26	14	58
8	9.5	20	13	52.5
11	8 d	22	14	53
12	10	19	10	60
10	7 d	21	13	53
11	12	20	5.5 d	55
1	1	0	10	0
1 d	12	23.5	13	55
7	11	11	9	60

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

The Chapter 2 test is Friday

pdf