Name/Per: Key

Algebra 2 Final Review 2014

** You will be able to have ***ONE*** 4x6 note card (Front and Back) on your final!**

- Prioritize your studies by focusing on targets you scored low on 1st – there is a place to note old scores
- Each target is given at least one problem in this packet
- Review problems are listed next to each target – You will need your book
- Answer keys will be available in the classroom and online at www.mahonymath.weebly.com
- Small mini lessons will be scheduled each class – sign up for the ones you want to participate in
- After school help is available T/W/Th 2:45-4
- SENIORS – TEST ON YOUR LAST DAY (or schedule it before) June 3rd or 4th if you don't make arrangements.

Score	**Chapter 4**	Practice
	T 4-1: I can find and interpret maximum and minimum values by graphing a quadratic.	Page 224 #13-21 odd, 23-31 odd, 32, 60, 61
	T 4-2: I can determine how many solutions a function has and find the value of those solutions/roots/zeros by graphing a quadratic	Page 233 #1-3, 4, 5, 8, 13, 20, 21
	T 4-3: I can find the roots/solutions/zeros by factoring a quadratic.	Pg 242 #17-19, 35-43, 47, 48
	T 4-4: I can perform algebraic operations to complex numbers.	Pg 250 18-23,26-4, 48-60,66,67
	T 4-6: I can find the roots/solutions/zeros using the quadratic formula for a quadratic.	Pg 269 # 1-13, 35-40

1. $f(x) = 2x^2 - 4x - 6$

y-intercept: $(0, -6)$

AOS: $x = 1$

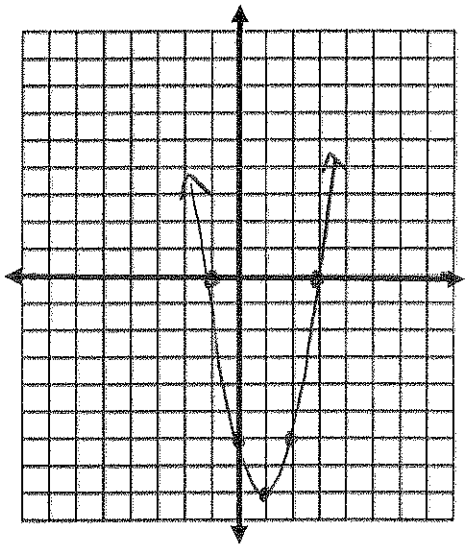
Vertex: $(1, -8)$

Max/Min: $y = -8$

Solution(s): $x = -1, x = 3$

Verify your solutions

x	y
-1	0
0	-6
1	-8
2	-6
3	0



2. Solve by factoring $4x^2 + 17x - 15 = 0$

$x = \frac{3}{4}, x = -5$

3. Solve using the Quadratic Formula $5x^2 + 2x + 4 = 0$

Discriminant: -76

Solution(s): $x = -\frac{1}{5} \pm \frac{1}{5}i\sqrt{19}$

4. $(-6 - i)(3 - 3i)$

$-21 + 15i$

Name/Per:

Score	Transformations Chapter	Practice
	T-T-3: I can transform linear, quadratic, square root, and absolute value equations and explain the motion.	TU-3 Retake Worksheet
	T-T-4: I can graph linear, quadratic, square root, and absolute value equations that have been transformed.	TU-4 Retake Worksheet
	T-T-5: I can write the equation of linear, quadratic, square root, and absolute value graphs.	TU-5 Retake Worksheet

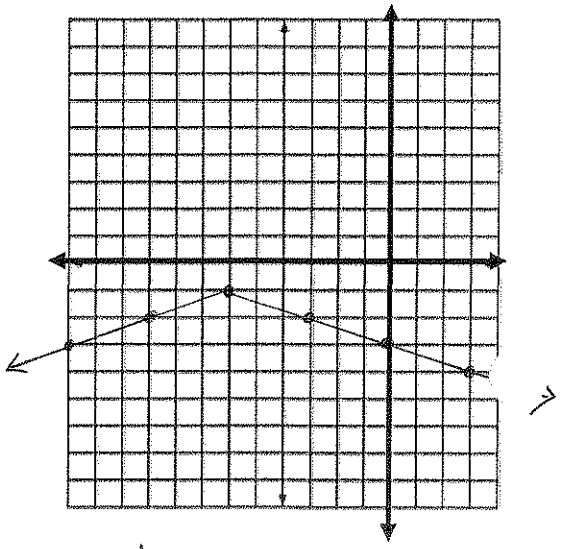
1. How does the graph of $y=\left(\frac{x+5}{4}\right)^2-3$ **compare** with the graph of $y=x^2$? Left 5, Down 3, Horizontal St by 4

   What is the new domain and range?

   D: all R

   R: $y \geq -3$

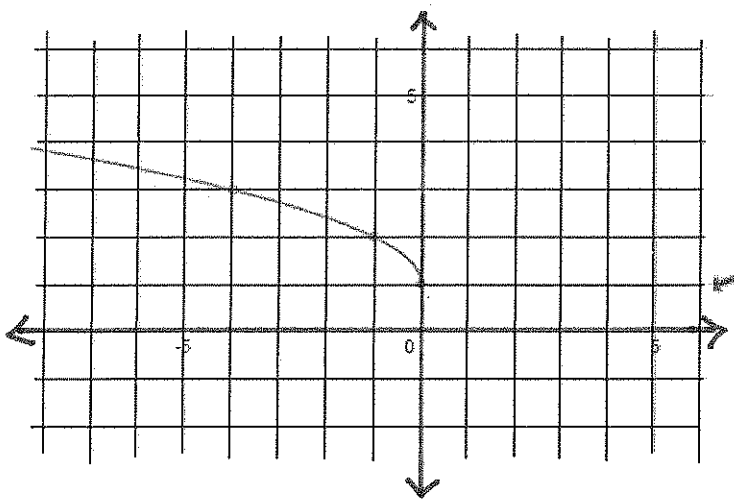
2. Graph the following. $y+1=-\left|\frac{x+6}{3}\right|$ $(-6,-1)$

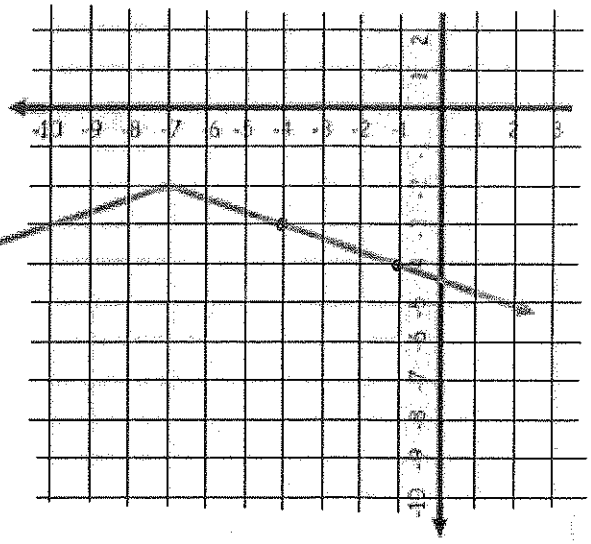


3. Write an equation for the following graphs.

$y=\sqrt{-x}+1$

$y=-\left|\frac{x+7}{3}\right|-2$





Name/Per:

Score	Chapter 5	Practice
	T 5-1: I can perform operations on polynomials expressions.	Pg 307 #17-23 odd, 29-39odd, 41-49odd, 54,55
	T 5-3: I can evaluate polynomial expressions, explaining the end behavior and state the number of real zeros.	Pg. 326 #5-12all 35-40all
	T 5-4: I can locate the zeros, relative maxima and minima of a polynomial on a graphing calculator. I can use this information to sketch a graph.	Pg. 334 #23-26all 27-32all
	T 5-5: I can identify zeros and intercepts from a graph or an equation and use this information to write an equation or graph a polynomial.	T5-5 Retake Worksheet

1. Simplify. (No negative exponents).

$\left(\frac{4x^{-2}y^3}{xy^{-4}}\right)^{-2} = \frac{x^6}{16y^{14}}$

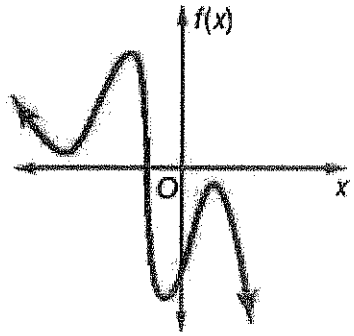
2. Find $p(4y-3)$ if $p(x) = 2x^2 - 4x + 3$

$p(4y-3) = 2(4y-3)^2 - 4(4y-3) + 3$

$= 32y^2 - 64y + 33$

3. A. Describe the end behavior. As $x \to \infty$ $y \to -\infty$, As $x \to -\infty$, $y \to \infty$
   B. Determine whether it represents an odd degree or an even degree polynomial.
   C. State the number of real zeros

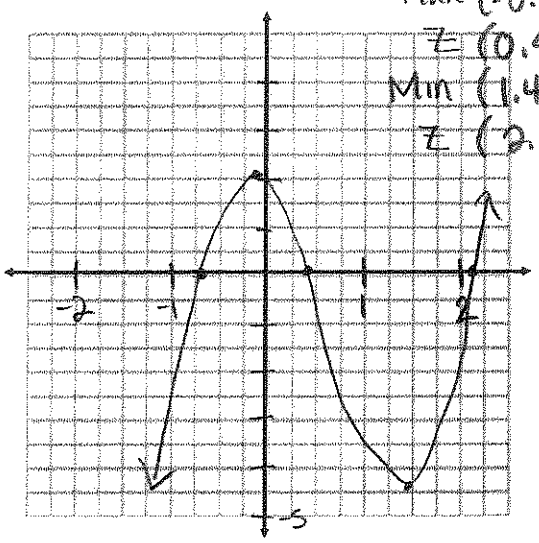
B. ODD, 5th Deg
C. 1



4. On a graphing calculator determine, real zeros, local and relative maxima and minima of the polynomial and sketch the graph and label all parts.

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

Z (-0.64, 0)
MAX (-0.15, 2.15)
Z (0.48, 0)
Min (1.48, -4.38)
Z (2.17, 0)



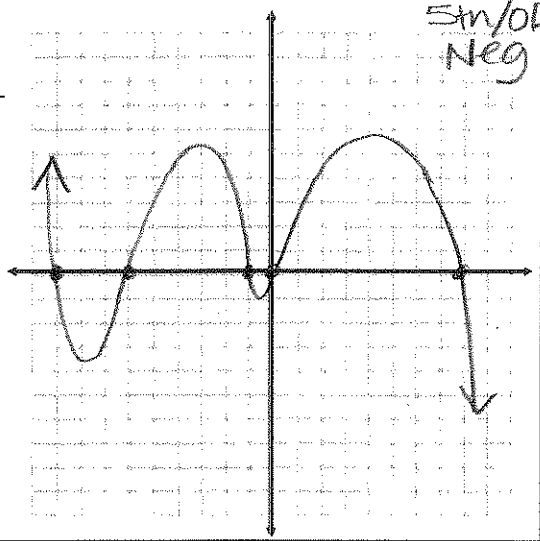
5. Graph the polynomial and determine the following:

$y = -x(x+6)(x-8)(x+1)(x+9)$

Zeroes: (0,0) (-6,0) (8,0) (-1,0) (-9,0)

Y-intercept: (0,0)

5th/ODD
Neg



Name/Per:

Score	Chapter 8	Practice
	T 8-1: I can simplify rational expressions with multiplication and division.	8.1 Pg. 534 #13-18all, 25-35all
	T 8-2: I can simplify rational expressions with addition and subtraction.	8.2 Pg. 541 #1-13all, 45,51
	T 8-3: I can solve rational expressions.	8.6 Pg. 576 #1-8all, 34,35

1. $\frac{10x^2-50x}{4x^2-9} \cdot \frac{2x+3}{4x^2-20x} =$ $\frac{5}{2(2x-3)}$, $x \neq \frac{3}{2}, -\frac{3}{2}, 0, 5$

2. $\frac{15x^2y}{42x^2y} - \frac{5xy^3}{6xy^2}$ LCM $= 42x^2y^2$

$\frac{5(3-7y)}{42}$, $x \neq 0$, $y \neq 0$

3. $\frac{4}{x^2-8x+12} = \frac{x}{x-2} + \frac{1}{x-6}$ $x \neq 6$ $x = -1$

Score	Chapter 6	Practice
	T 6-1: I can perform composition of functions.	6.1 Pg. 389 #1-6all
	T 6-2: I can find inverse functions and determine whether it is a function or a relation.	6.2 Pg. 396 #15-32all

1. Use the functions f and g to find the following:

$f(x) = x^2 + 3x - 5$ $\quad$ $g(x) = 2x + 1$

$(f+g)(x) = x^2+5x-4$

$(f \cdot g)(x) = 2x^3+7x^2-7x-5$

$(f \circ g)(x) = f(g(x))$
$= f(2x+1)$
$= (2x+1)^2 + 3(2x+1) - 5$
$= 4x^2+10x-1$

$(g \circ f)(x) = g(f(x))$
$= g(x^2+3x-5)$
$= 2x^2+6x-9$

2. For these problems find the inverse and (use the horizontal line test to) ***determine if the inverse is a function or a relation.***

$f(x) = \frac{\sqrt{5x+8}}{3}$

$f^{-1}(x) = \frac{(3x)^2-8}{5}$, yes it is a function.

Name/Per:_____

TU-3: I can transform equations and explain the motion.

For the following problems: **All of this should be done without graphing**

- Describe the transformation that is happening.
- Determine the domain and range.

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

Right 5

Domain: All ℝ

Range: $y \geq 0$

2. $y = 4 + \sqrt{x-7}$ (7, 4)

up 4, Right 7

Domain: $x \geq 7$

Range: $y \geq 4$

3. ~~$y-5$~~ $= (x+1)^2 + 5$

Left 1, up 5

Domain: All ℝ

Range: $y \geq 5$

4. $y = -3(x+4)^2 + 6$

V flip, V stretch by 3, left 4, up 6 (-4, 6)

Domain: All ℝ

Range: $y \leq 6$

5. $\frac{y}{2} = \left|\frac{x}{4}\right| + 2$ $y = 2\left|\frac{x}{4}\right| + 4$

V St by 2, Hor St by 4, up 4

(0, 4)

Domain: All ℝ

Range: $y \geq 4$

6. $\frac{y+1}{-3} = \sqrt{x+2}$ $y = -3\sqrt{x+2} - 1$ (-2, -1)

V. Flip, V St by 3, Left 2, down 1

Domain: $x \geq -2$

Range: $y \leq -1$

the following problems: **All of this should be done without graphing**

- Describe the transformation that is happening.
- Write an equation for the transformations.
- Determine the domain and range.

1. $y = \sqrt{x}$ shifted down 5 units and vertically stretched by 2.

Equation: $y = 2\sqrt{x} - 5$ Domain: $x \geq 0$ Range: $y \geq -5$

2. $y = x^2$ Shifted to the right 3 units, up 4 units and is reflected of the x-axis.

Equation: $y = -(x-3)^2 + 4$ Domain: all ℝ Range: $y \leq 4$

3. $y = |x|$ Stretched horizontally by 3 and vertically by 7. Then shifted to the left 5 and up 12.

Equation: $y = 7\left|\frac{x+5}{3}\right| + 12$ Domain: all ℝ Range: $y \geq 12$

4. $y = x^2$ Vertically stretched by $\frac{2}{3}$, shifted right 10, down 3 units and then reflected over the y-axis.

Equation: $y = \frac{2}{3}(-x+10)^2 - 3$ Domain: all ℝ Range: $y \geq -3$

Name/Per: _____

TU-4 Retake Problems

Graph the groups of functions on the following graphs. Determine the domain and range for each function.

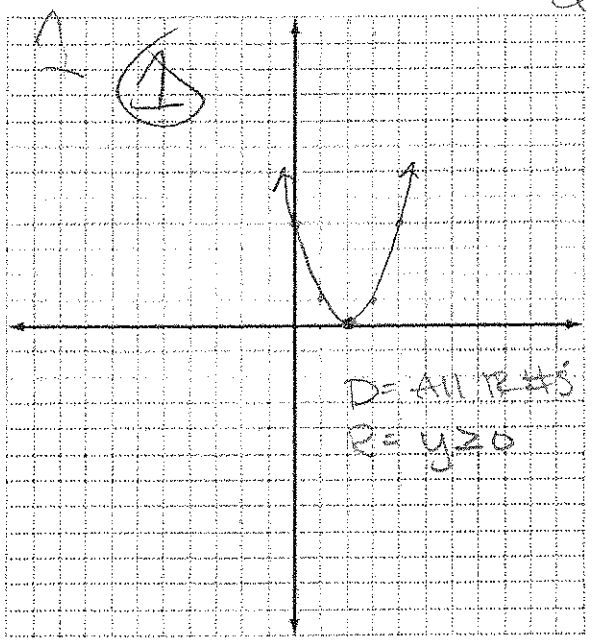
Quadratic Parent Function $y = x^2$	Domain: All real numbers	Range: $y \geq 0$
1. $y = (x-2)^2$	2. $y - 3 = (x+1)^2$ $y = (x+1)^2 + 3$	
3. $y = 2x^2 - 4$	4. $\frac{y}{-3} = (x-1)^2 - 6$ $y = -3(x-1)^2 + 18$	
5. $y = \frac{1}{2}(-x+7)^2 + 3$ $y = \frac{1}{2}(-(x-7))^2 + 3$	6. $-y = \left(-\frac{x+2}{2}\right)^2 + 5$ $y = -\left(-\frac{x+2}{2}\right)^2 - 5$	

Square Root Parent Function $y = \sqrt{x}$	Domain: $x \geq 0$	Range: $y \geq 0$
1. $y = \sqrt{x} + 3$	2. $y = \sqrt{\frac{x-1}{3}} + 1$	
3. $y = \sqrt{-x+2}$ $y = \sqrt{-(x-2)}$	4. $-y = \frac{1}{2}\sqrt{-x+3} - 2$ $y = -\frac{1}{2}\sqrt{-(x-3)} + 2$	
5. $y = -2\sqrt{x+5} + 2$	6. $y^2 = x - 2$ $y = \sqrt{x-2}$	

Absolute Value Parent Function $y = \lvert x \rvert$	Domain: All Real Numbers	Range: $y \geq 0$
1. $y = \lvert x+4 \rvert$	2. $y + 4 = \lvert x-5 \rvert$ $y = \lvert x-5 \rvert - 4$	
3. $y = 2\lvert x-1 \rvert + 2$	4. $\frac{y}{3} = -\lvert x \rvert + 1$ $y = -3\lvert x \rvert + 3$	
5. $y = -4\lvert x+7 \rvert + 10$	6. $y - 1 = -\lvert \frac{x+2}{3} \rvert$ $y = -\lvert \frac{x+2}{3} \rvert + 1$	

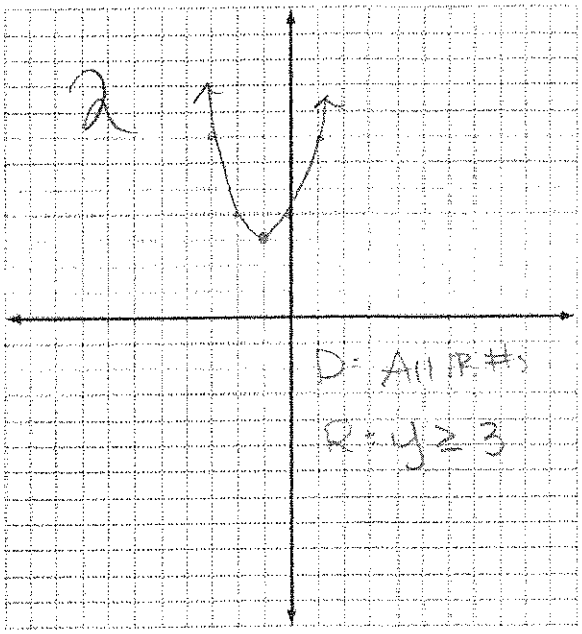
Quads

1



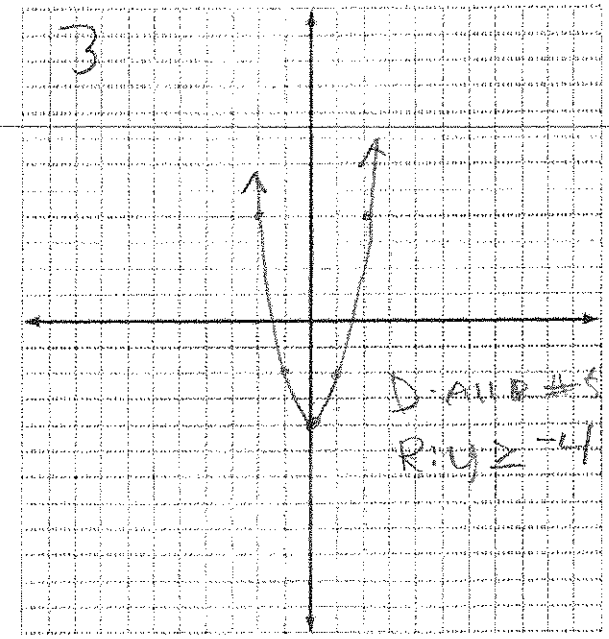
D: All IR #'s
R: $y \geq 0$

2



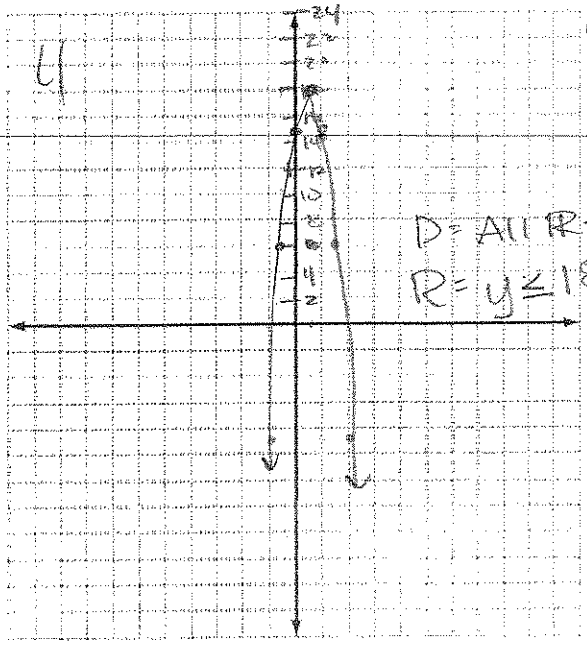
D: All IR #'s
R: $y \geq 3$

3



D: All IR #'s
R: $y \geq -4$

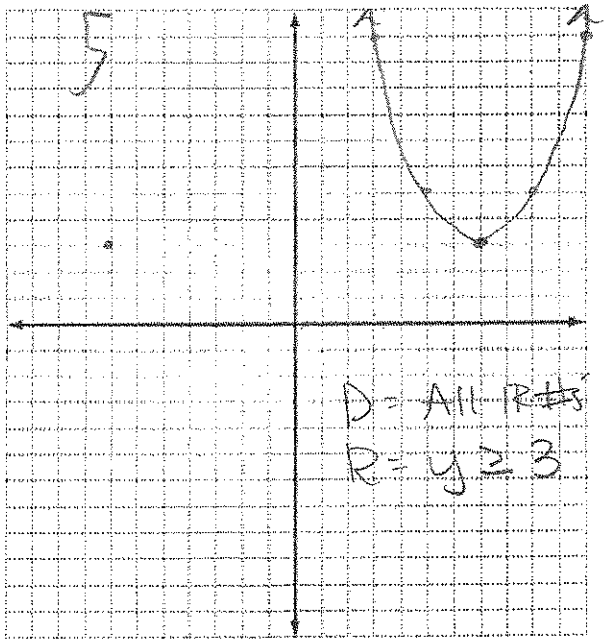
4



(1,3)
(2,12)
(3,27)

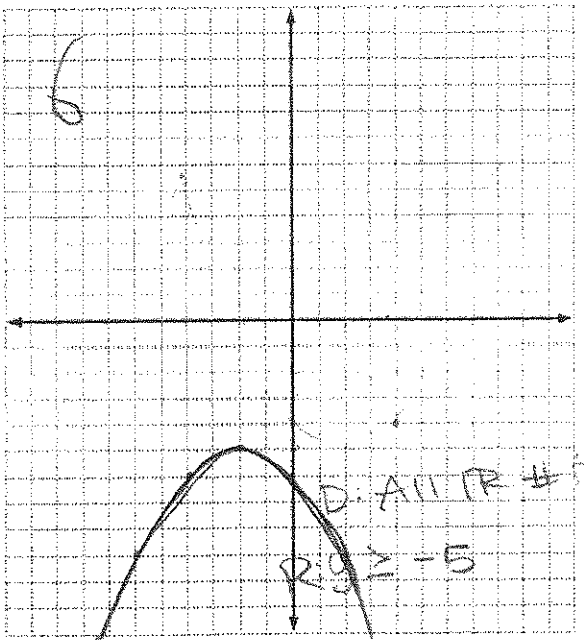
D: All IR #'s
R: $y \leq 18$

5



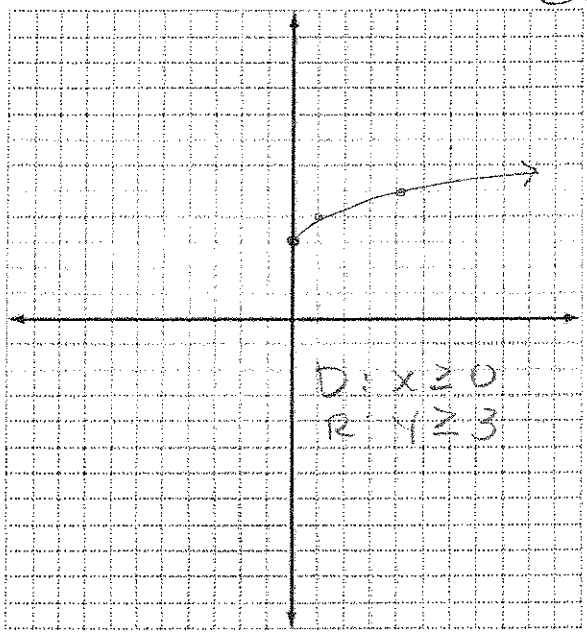
D: All IR #'s
R: $y \geq 3$

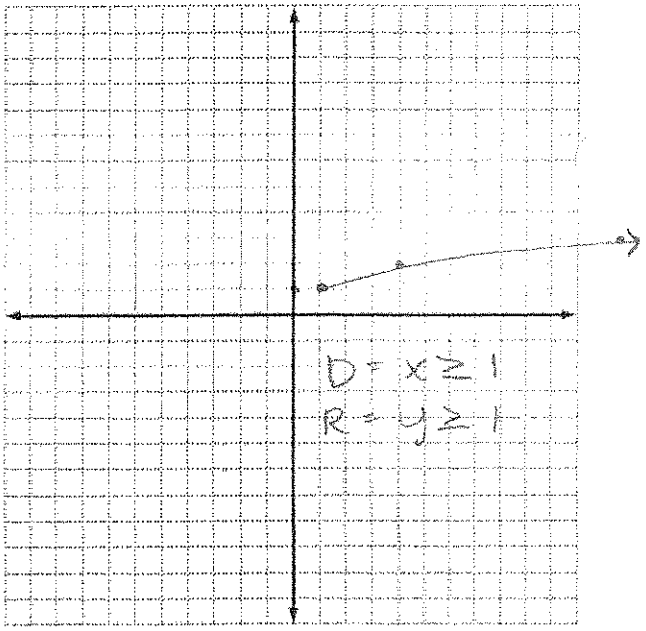
6

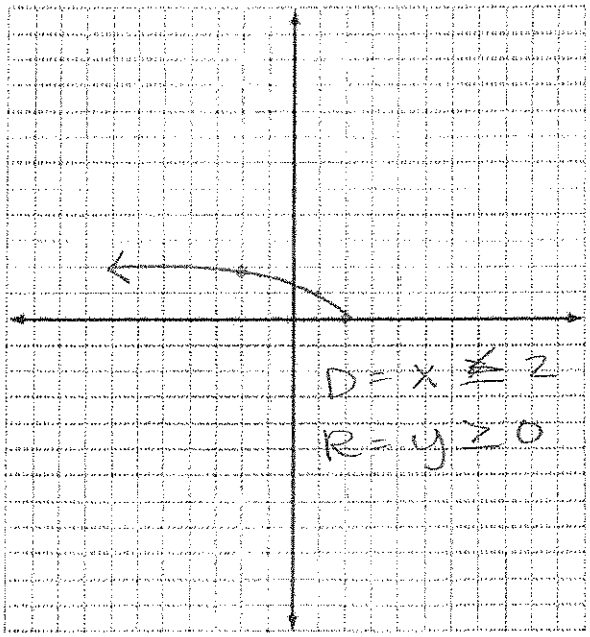


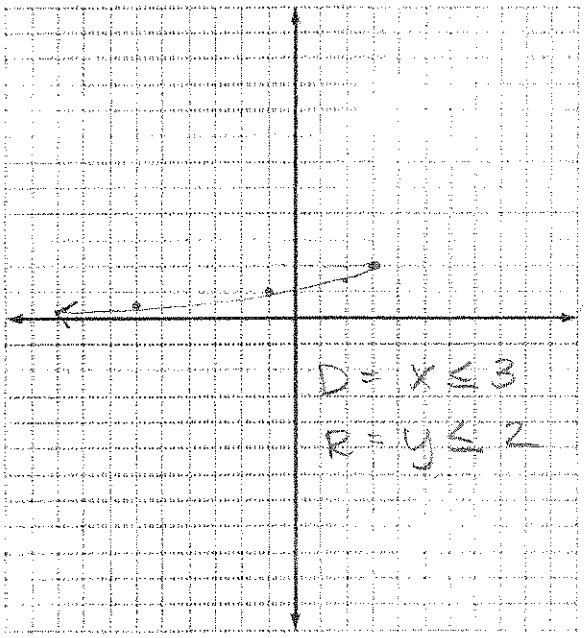
D: All IR #'s
R: $y \geq -5$

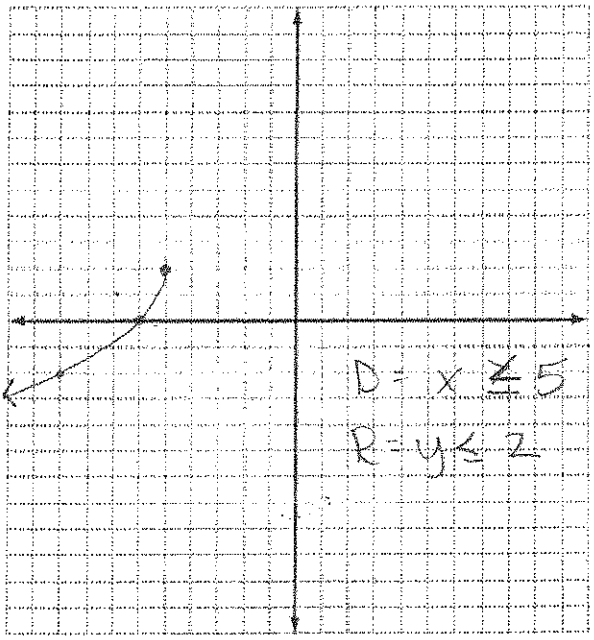
SG RT

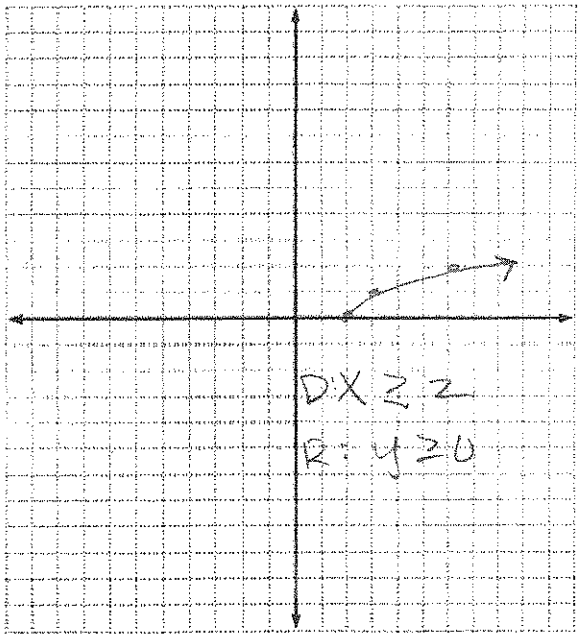




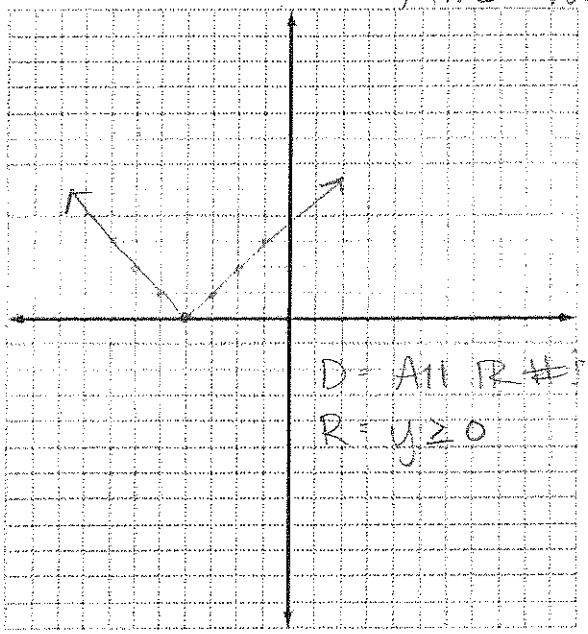




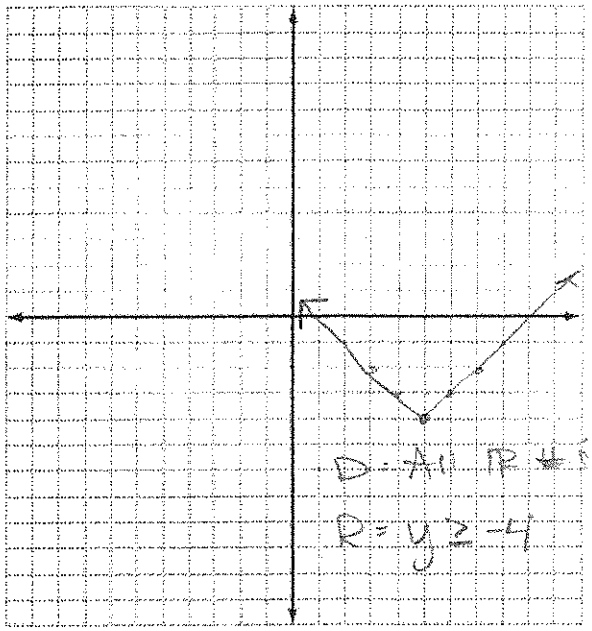




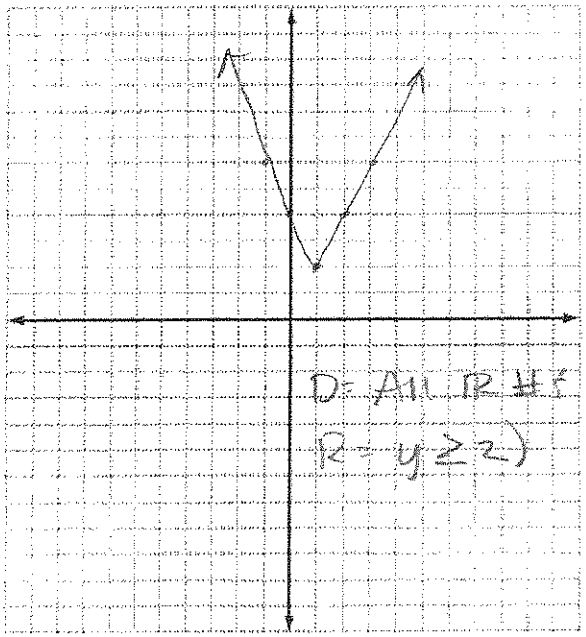
Abs. value



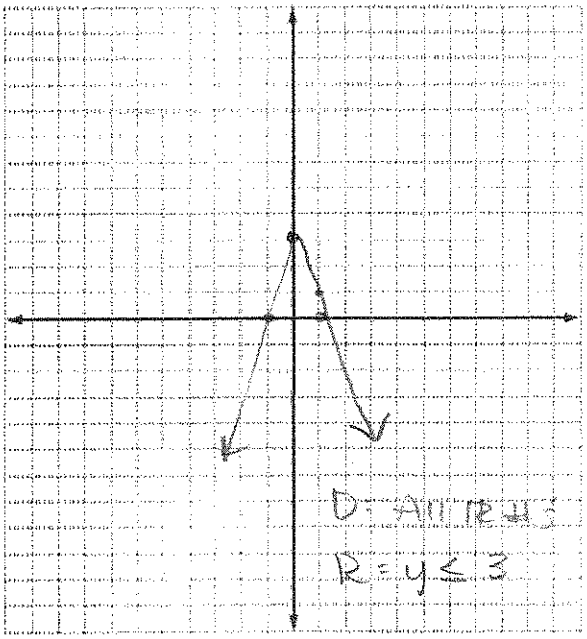
D: All R ∈
R: $y \geq 0$



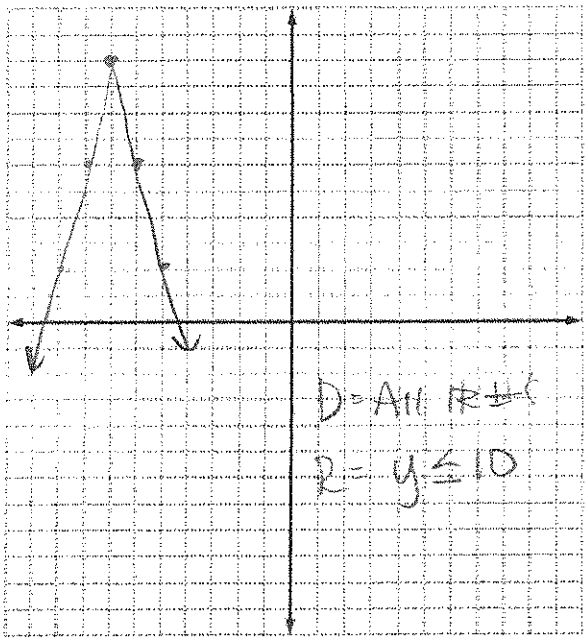
D: All R ∈
R: $y \geq -4$



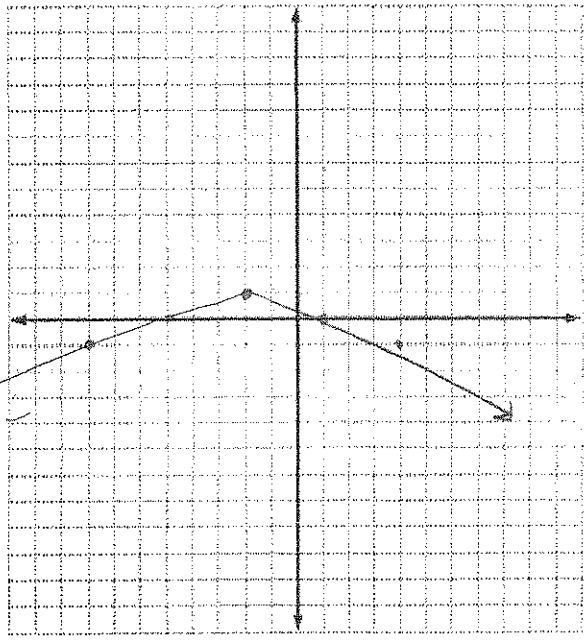
D: All R ∈
R: $y \geq 2$



D: All R ∈
R: $y \leq 3$



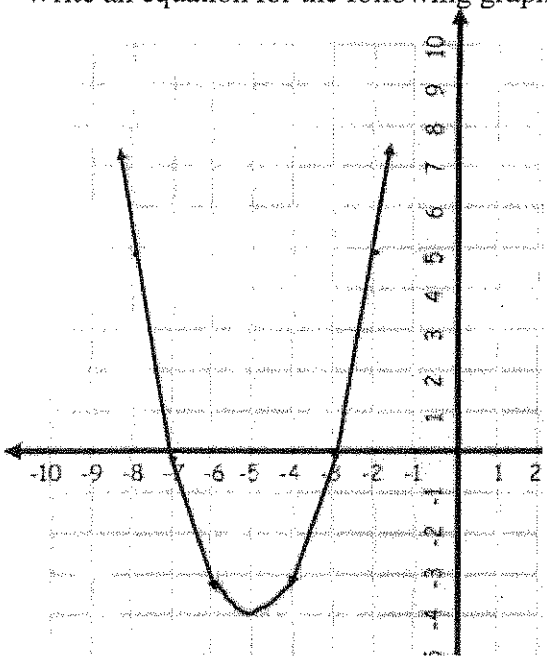
D: All R ∈
R: $y \leq 10$



Name/Per:_____

TU-5 I can write the equation of linear, quadratic, square root, and absolute value graphs.

Write an equation for the following graphs. Determine their parent function and the domain and range.

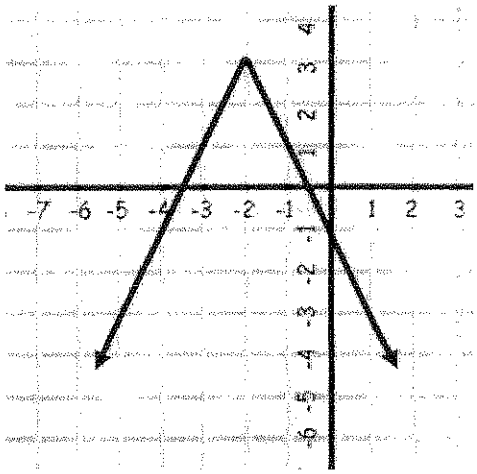


Parent function: $y = x^2$ (-5, -4)

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

Domain: All R

Range: $y \geq -4$

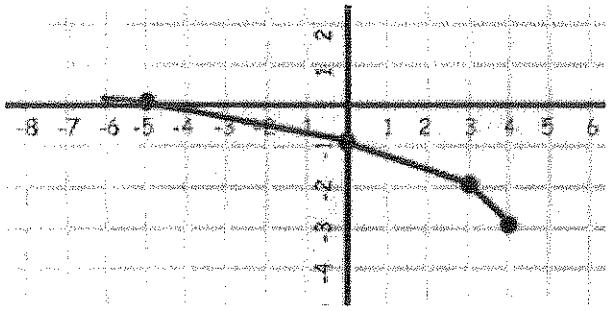


Parent function: $y = |x|$ (-2, 3)

Equation: $y = |x+2| + 3$

Domain: all R

Range: $y \leq 3$

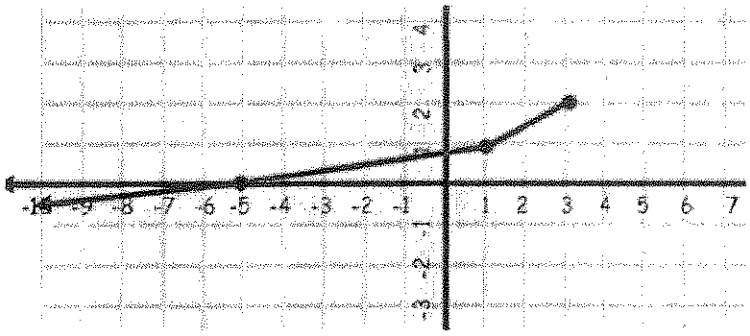


Parent function: $y = \sqrt{x}$ (4, -3)

Equation: $y = \sqrt{-(x-4)} - 3$

Domain: $x \leq 4$

Range: $y \geq -3$



Parent function: $y = \sqrt{x}$ (3, 2)

Equation: $y = -\sqrt{-(x-3)} + 2$

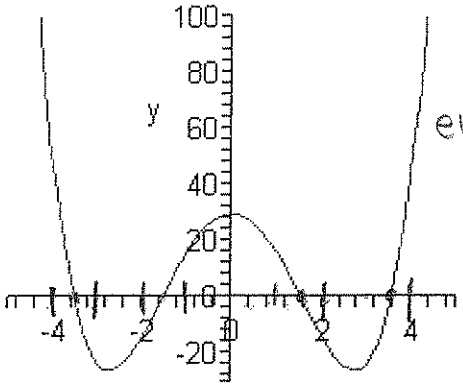
Domain: $x \leq 3$

Range: $y \leq 2$

Algebra II
T5-5 Graphing Polynomials

Name: Key
Per: ____ Date: ____

Identify the zeroes and y-intercept for each graph and then write the equation in factored form.

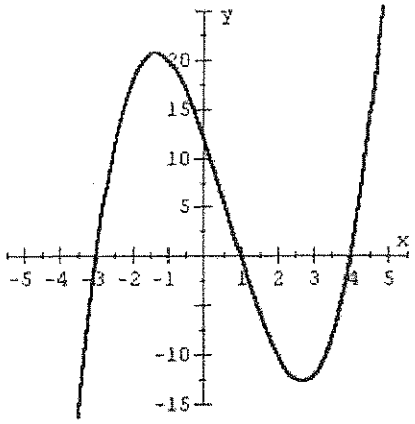


4th even +

zeros: $x=-3.5$ $x=-1.75$ $x=1.75$ $x=3.5$

$y = a(x+3.5)(x+1.75)(x-1.75)(x-3.5)$

2



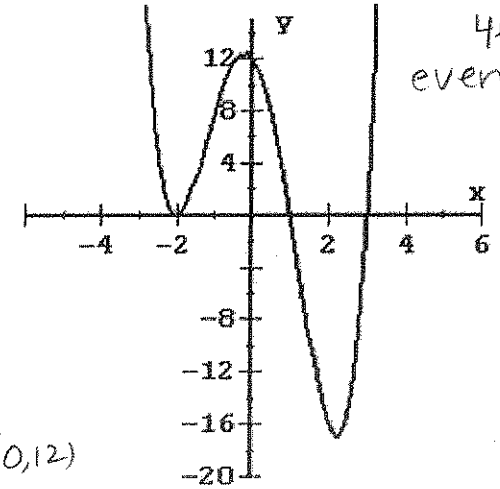
3rd ODD +

y-int (0, 12)

$x=-3$ $x=1$ $x=4$

$y = 1(x+3)(x-1)(x-4)$

3.



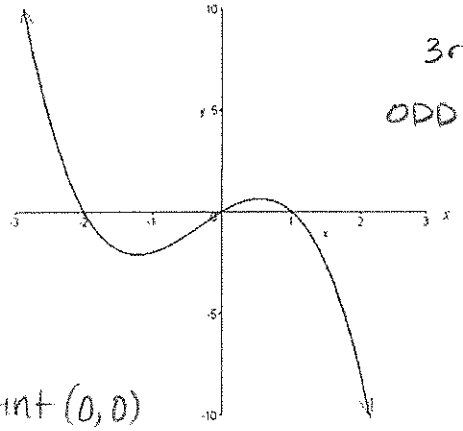
4th even +

y-int (0,12)

$x=-2$ (twice) $x=1$ $x=3$

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

4.



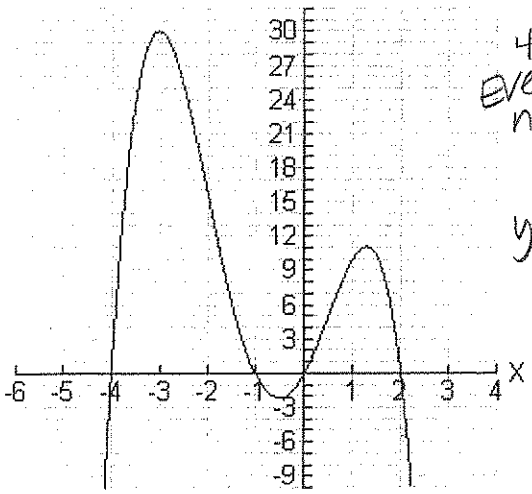
3rd ODD −

y-int (0,0)

$x=-2$ $x=0$ $x=1$

$y = -x(x+2)(x-1)$

5.



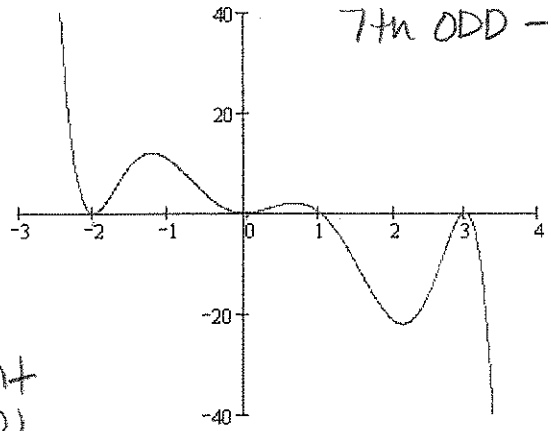
4th even neg

y-int 0,0

$x=-4$ $x=-1$ $x=0$ $x=2$

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

6.



7th ODD −

y-int (0,0)

$x=-2$ (twice) $x=0$ (twice) $x=1$ $x=3$ (twice)

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

For #6-11, identify the zeroes and y-intercept for each equation. Then sketch the graph of each function.

6. $f(x) = x^2(x-1)(x+2)(x+4)$ 5th +

$0 = x^2(x-1)(x+2)(x+4)$

$x=0$ (turn) $x=1$ $x=-2$ $x=4$

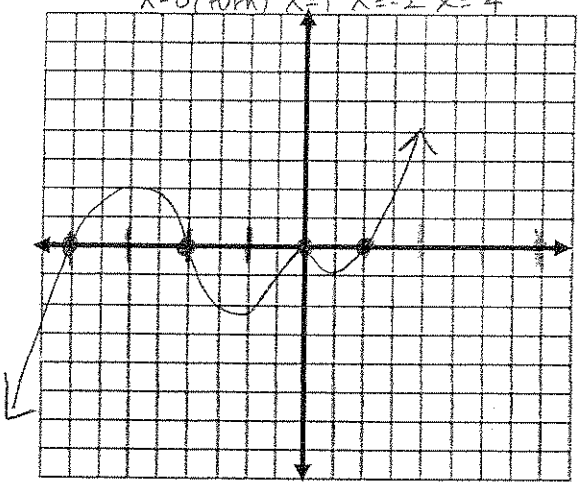
y-int

(0,0) turn

$x=1$

$x=-2$

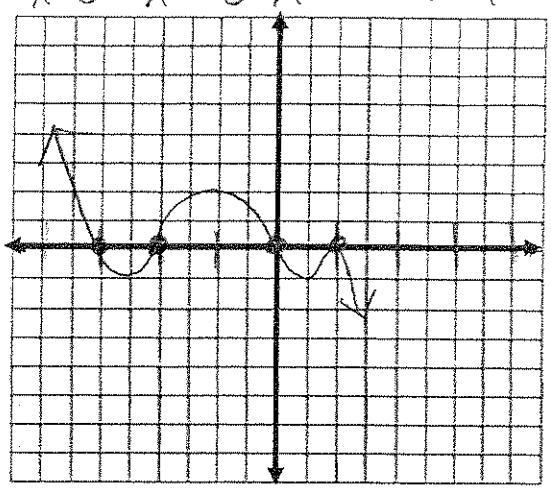
$x=-4$



7. $f(x) = -x(x+3)(x+2)(x-1)^2$

y-int 0,0 (5th Neg)

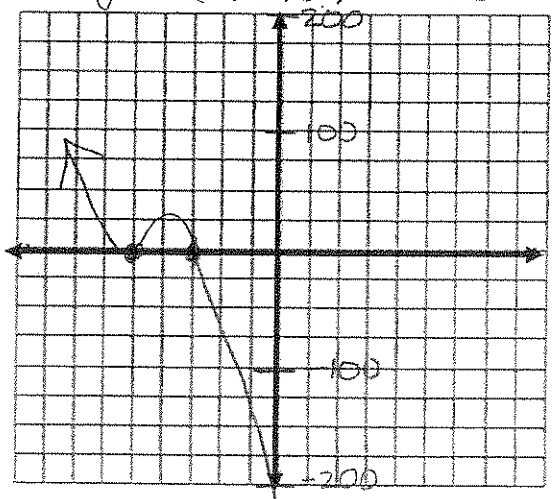
$x=0$ $x=-3$ $x=-2$ $x=1$ (turn)



8. $f(x) = -3(x+5)^2(x+3)$

$y = -3(5)(5)(3) = -225$

neg odd



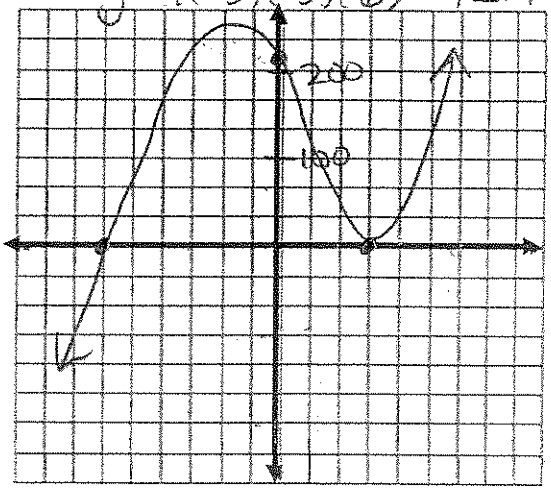
$x=-5$ turn

$x=-3$

(0, -225)

9. $f(x) = 4(x-3)(x-3)(x+6)$ 3rd +

$y = 4(-3)(-3)(6) = +216$



$x=3$

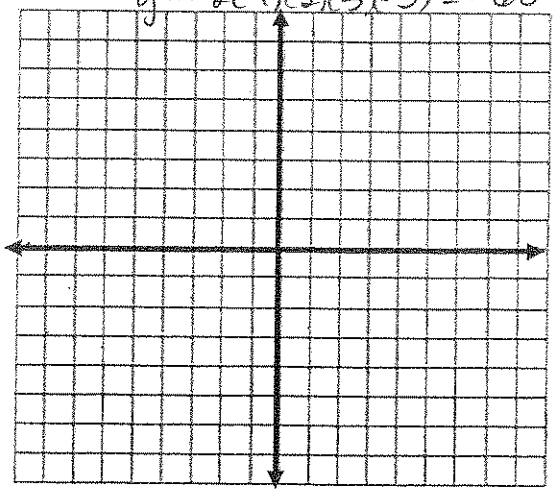
$x=3$

$x=-6$

(0, +216)

10. $f(x) = -2(x-1)(x+2)(x+5)(x-3)$

$y = -2(-1)(2)(5)(-3) = -60$



$x=1$

$x=-2$

$x=-5$

$x=3$

0, -60

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