Name/Per:_____

Algebra 2 Final Review 2014 – Semester 1

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

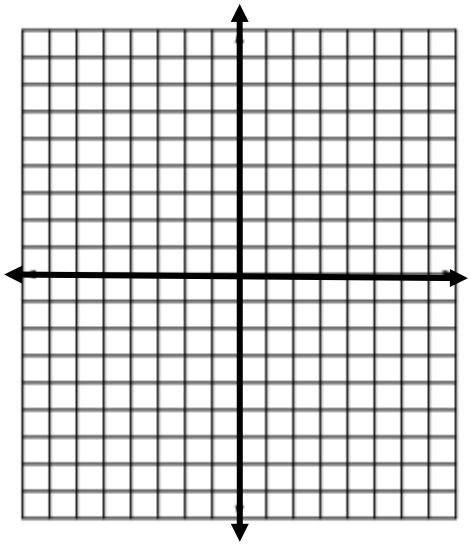
   y-intercept:_____

   AOS:_____

   Vertex:_____

   Max/Min:_____

   Solution(s):_____
   Verify your solutions



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

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

   Discriminant: _____

   Solution(s):_____

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

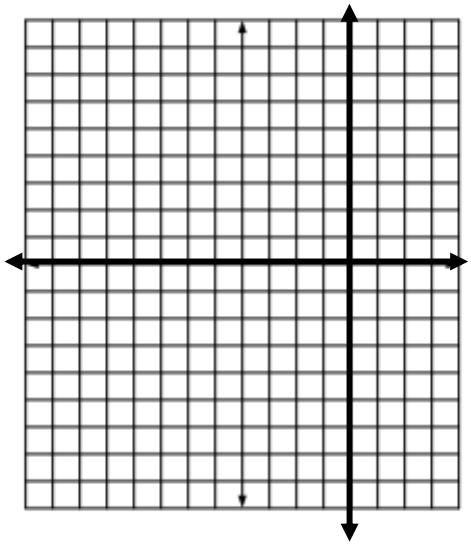
Name/Per:_____

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 $y = x^2$?

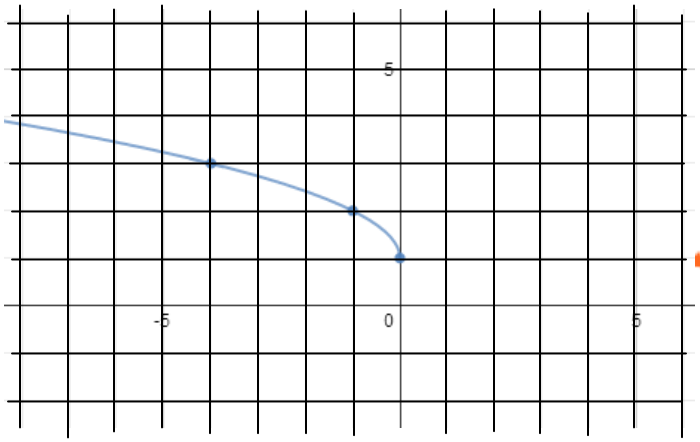
   What is the new domain and range?

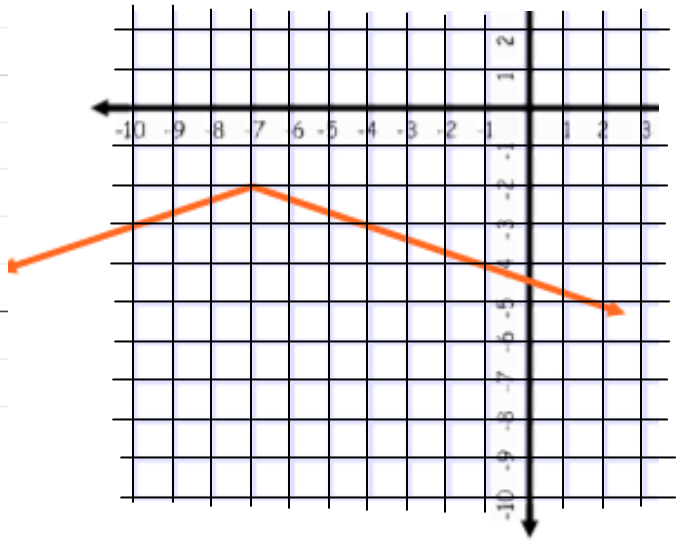
2. Graph the following. $y + 1 = -\left|\frac{x+6}{3}\right|$



3. Write an equation for the following graphs.

$y =$ _____ $y =$ _____





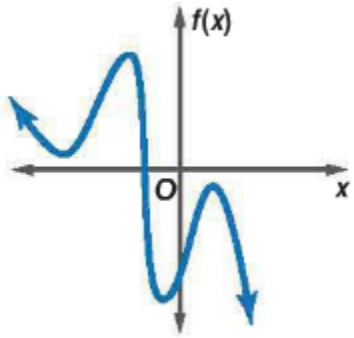
Name/Per:_____

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

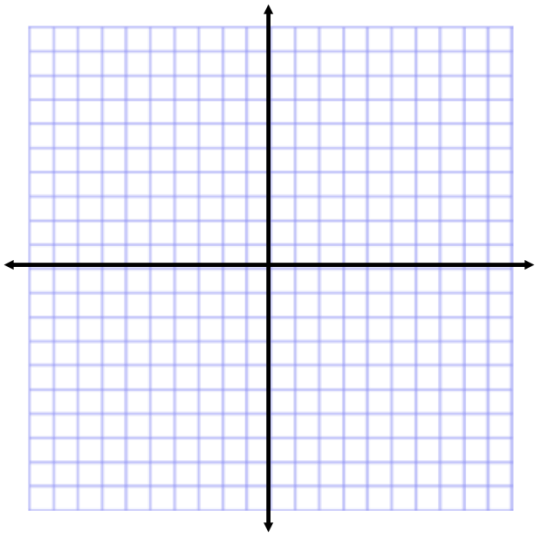
1. Simplify. (No negative exponents).
$$\left(\frac{4x^{-2}y^{3}}{xy^{-4}}\right)^{-2}$$

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

3. A. Describe the end behavior.
B. Determine whether it represents an odd degree or an even degree polynomial.
C. State the number of real zeros



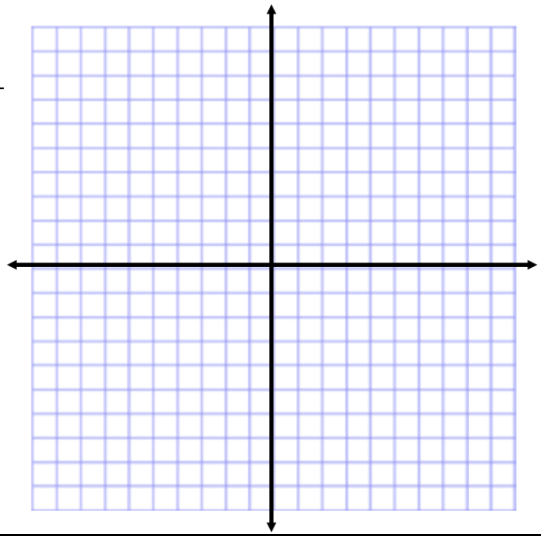
4. On a graphing calculator determine, real zeros, local and relative maxima and minima of the polynomial and sketch the graph and label all parts.
$$f(x) = 3x^3 - 6x^2 - 2x + 2$$



5. Graph the polynomial and determine the following:
$$y = -x(x+6)(x-8)(x+1)(x+9)$$

Zeroes: _____

Y-intercept: _____



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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. $\frac{10x^2-50x}{4x^2-9} \cdot \frac{2x+3}{4x^2-20x}$

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

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

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:

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

$(f + g)(x)$ $\quad$ $(f \cdot g)(x)$

$(f \circ g)(x)$ $\quad$ $(g \circ f)(x)$

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

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

$f^{-1}(x) =$

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

Domain:_____

Range: _____

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

Domain:_____

Range: _____

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

Domain:_____

Range: _____

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

Domain:_____

Range: _____

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

Domain:_____

Range: _____

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

Domain:_____

Range: _____

For 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: _____ Domain:_____ Range: _____

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

Equation: _____ Domain:_____ Range: _____

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

Equation: _____ Domain:_____ Range: _____

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

Equation: _____ Domain:_____ Range: _____

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. $y - 3 = (x+1)^2$	
3. $y = 2x^2 - 4$	4. $\frac{y}{-3} = (x-1)^2 - 6$	
5. $y = \frac{1}{2}(-x+7)^2 + 3$	6. $-y = \left(-\frac{x+2}{2}\right)^2 + 5$	

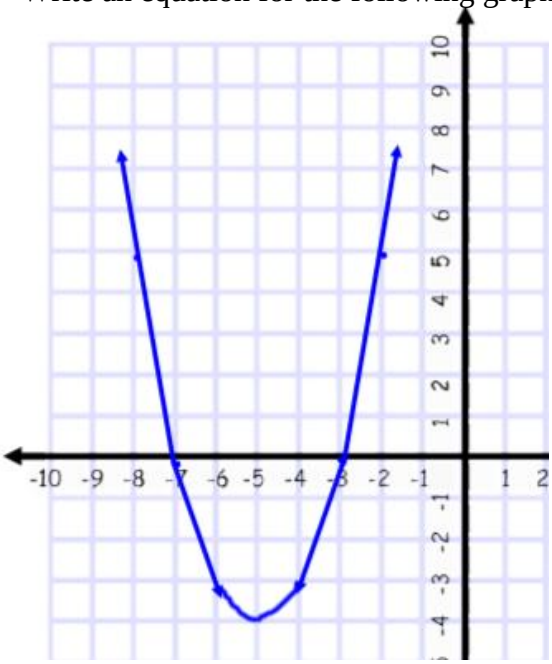
Square Root Parent Function $y = \sqrt{x}$	Domain: $x \geq 0$	Range: $y \geq 0$
1. $y = \sqrt{x} + 3$	2. $y = \sqrt{\frac{x-1}{3}} + 1$	
3. $y = \sqrt{-x+2}$	4. $-y = \frac{1}{2}\sqrt{-x+3} - 2$	
5. $y = -2\sqrt{x+5} + 2$	6. $y^2 = x - 2$	

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

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.

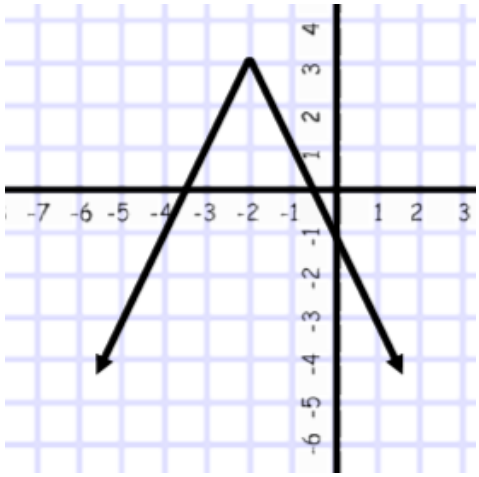


Parent function:_____

Equation:_____

Domain:_____

Range:_____

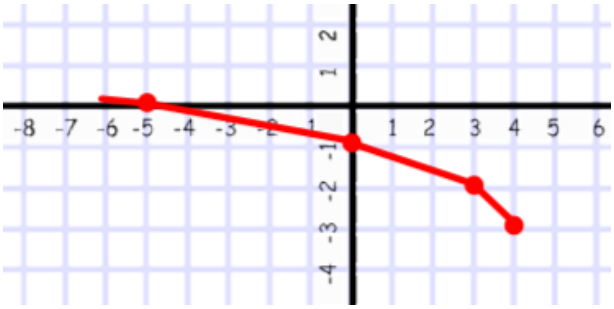


Parent function:_____

Equation:_____

Domain:_____

Range:_____

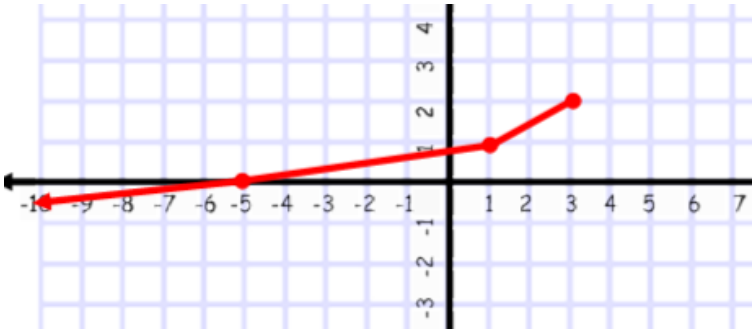


Parent function:_____

Equation:_____

Domain:_____

Range:_____



Parent function:_____

Equation:_____

Domain:_____

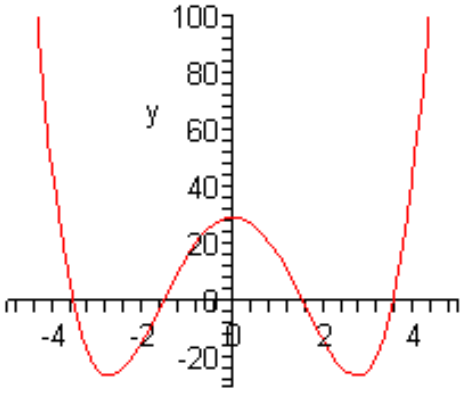
Range:_____

Name/Per:_____

T5-5 Graphing Polynomials

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

1.



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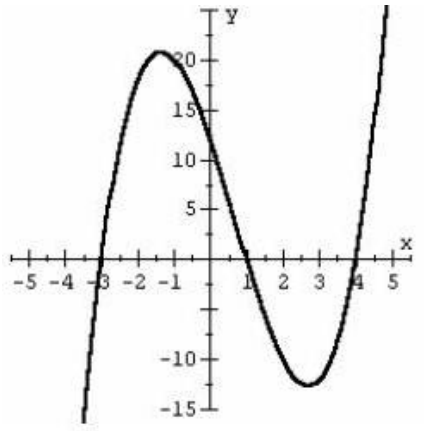

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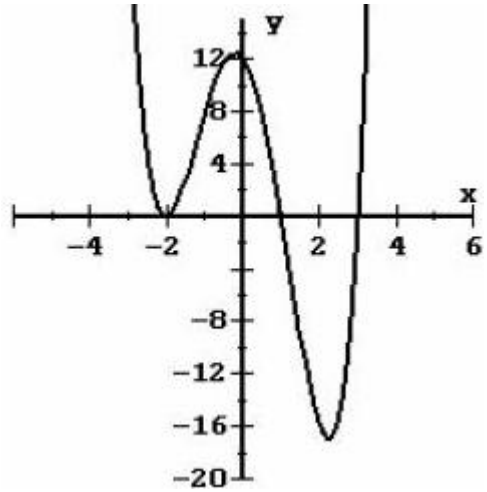
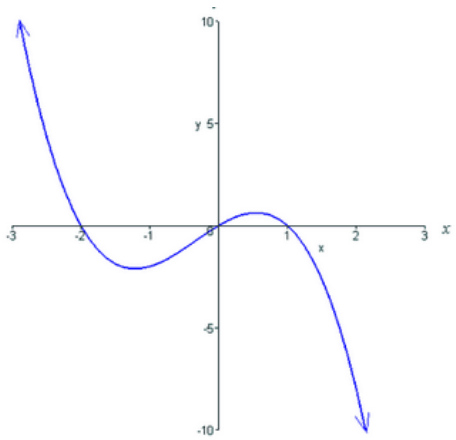
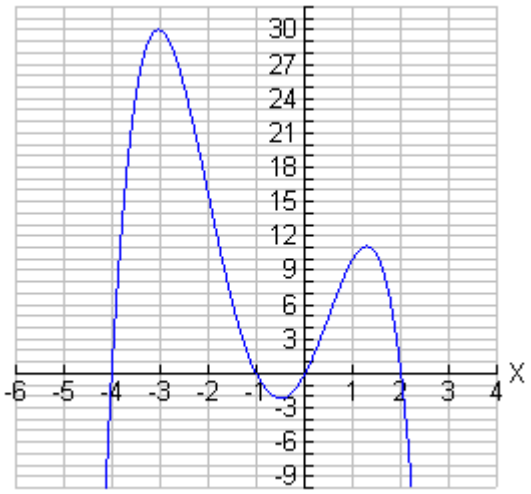


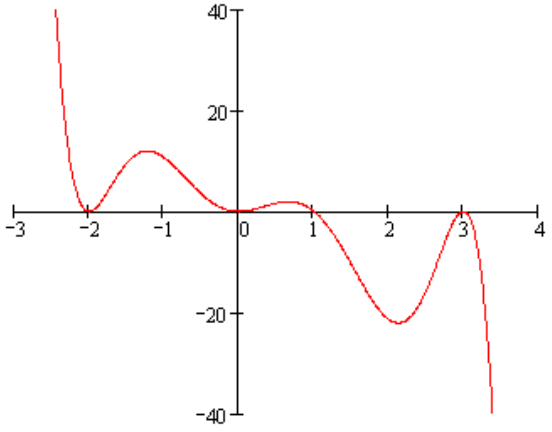
4.



5.



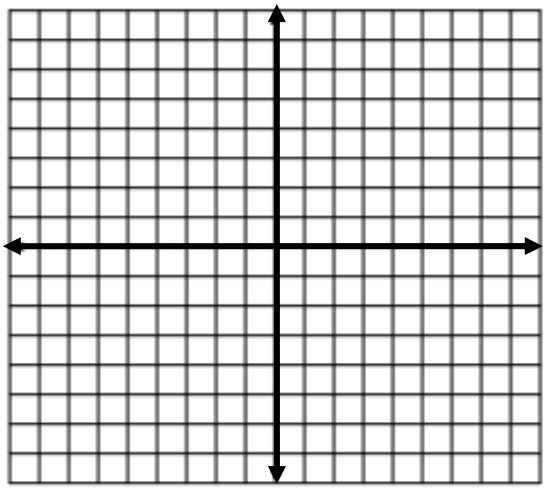
6.



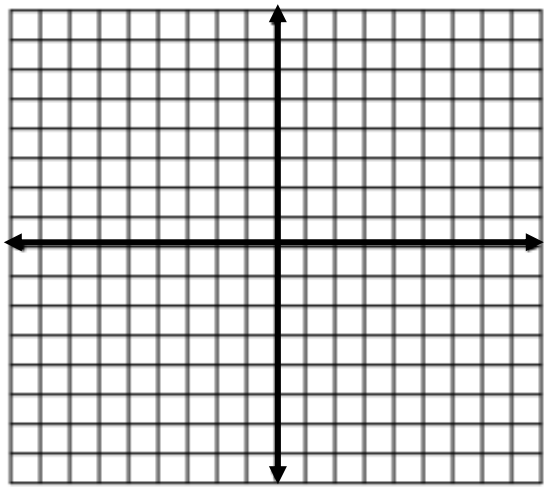
Name/Per:_____

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

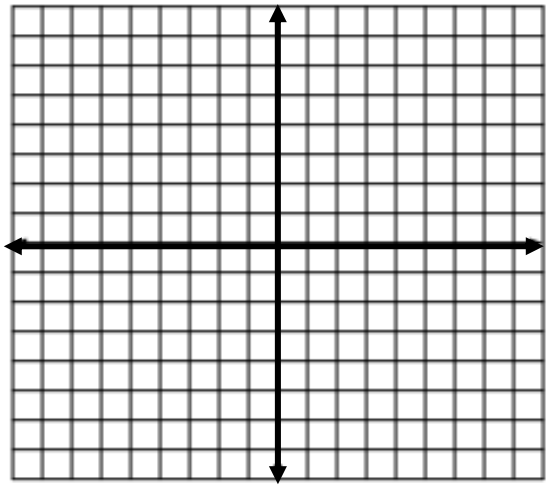
6. $f(x) = x^2(x-1)(x+2)(x+4)$



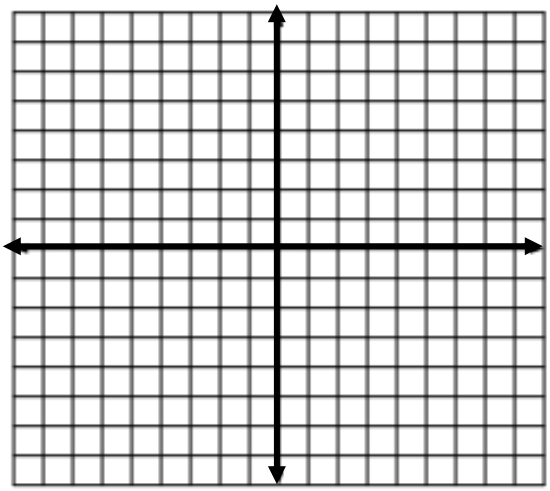
7. $f(x) = -x(x+3)(x+2)(x-1)^2$



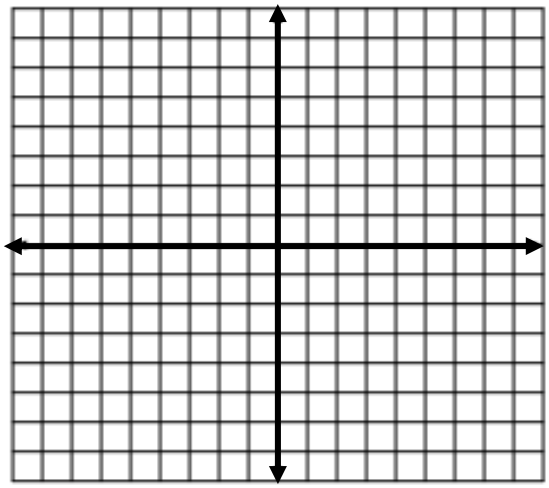
8. $f(x) = -3(x+5)^2(x+3)$



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



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



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