Review for Quadratics Test   Name _____ Period _____
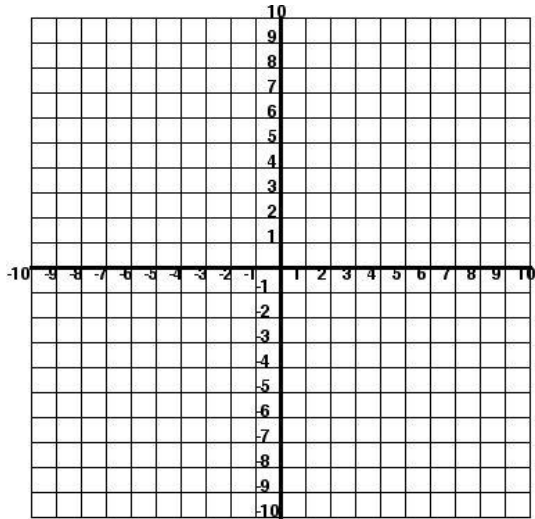
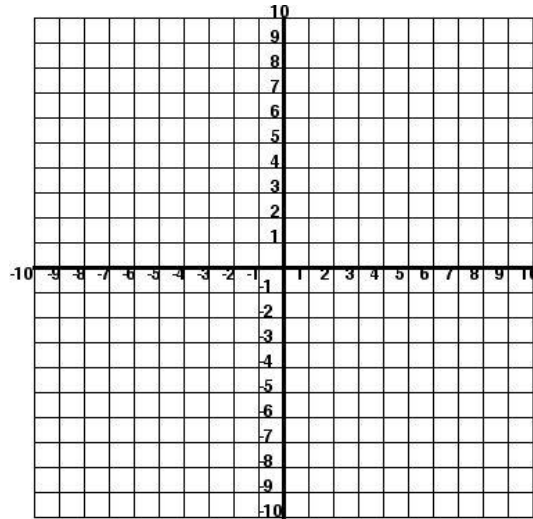| Graph each function. Be sure it goes through the vertex, x-intercepts, and y-intercept. |
|---|

1. $f(x) = -4x^2 - 12x + 16$

x- intercepts: _____, _____
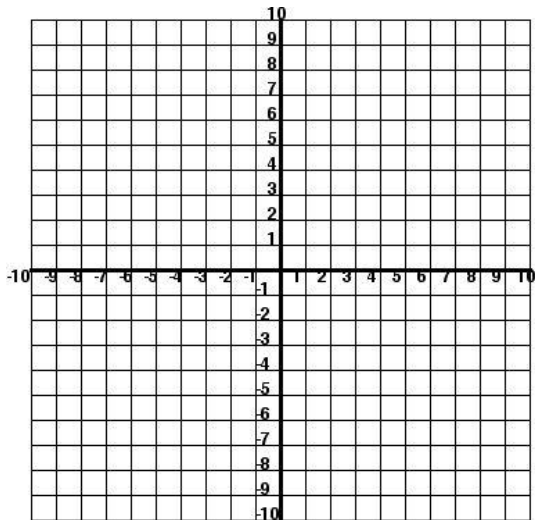y-intercept: _____
Vertex: _____

2. $f(x) = 6x^2 + 36x$

x- intercepts: _____, _____
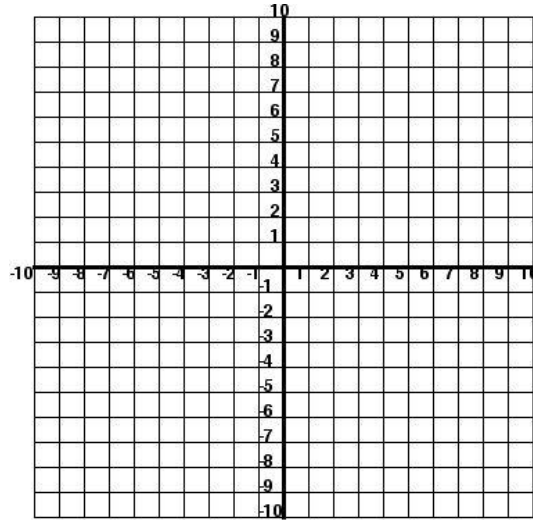y-intercept: _____
Vertex: _____

3. $f(x) = 9x^2 - 5x + 3$

x- intercepts: _____, _____
y-intercept: _____
Vertex: _____

4. $f(x) = \frac{1}{7}x^2 + 2x + 3$

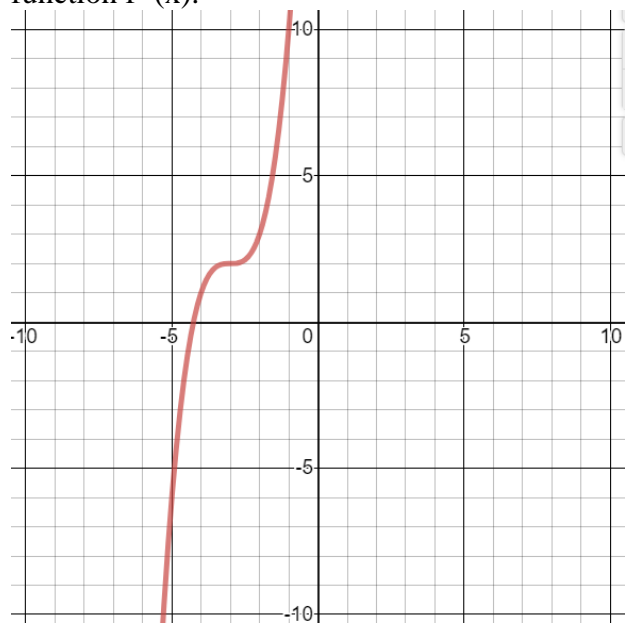x- intercepts: _____, _____
y-intercept: _____
Vertex: _____

Write the equation of the parabola in standard form and then identify the vertex.
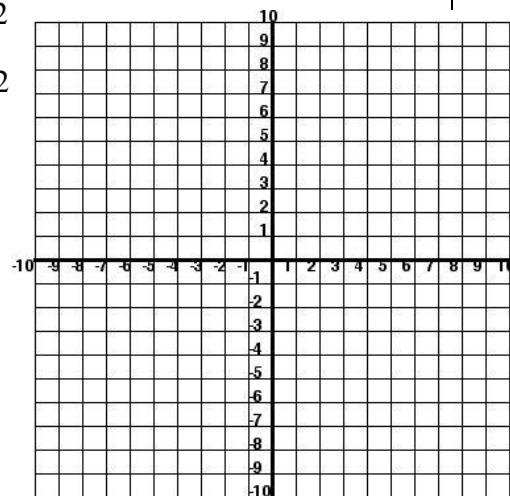
5. $f(x) = 3x^2 - 18x + 12$

6. $f(x) = 4x^2 + 8x - 5$

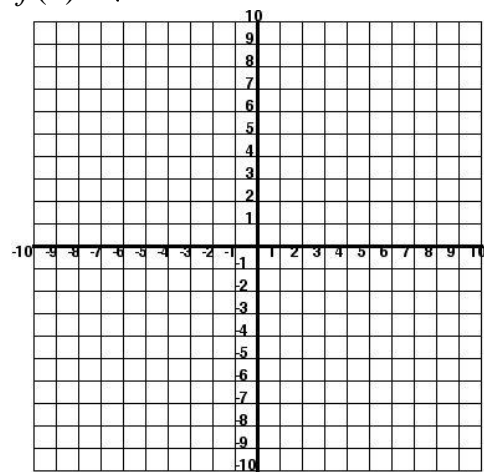| 7. Given the graph of f(x), graph the inverse function f⁻¹(x).	8. Graph the piecewise function and state if it is continuous.
	$$f(x) = \begin{cases} x^2 & x \le 1 \\ 3 & 1 < x \le 2 \\ \dfrac{2}{3}x+1 & x > 2 \end{cases}$$

Graph Each Function. Be sure there are whole number points clearly marked that show the overall shape of the graph. State any shifts or reflections relative to the parent function.
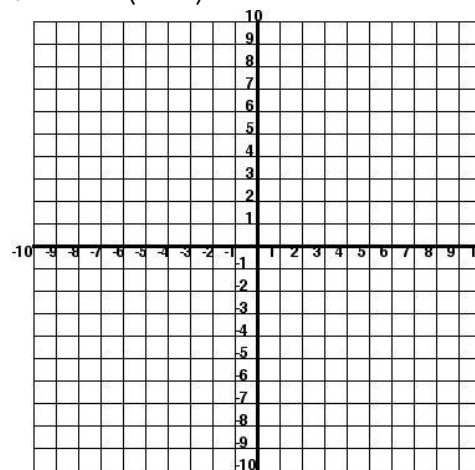
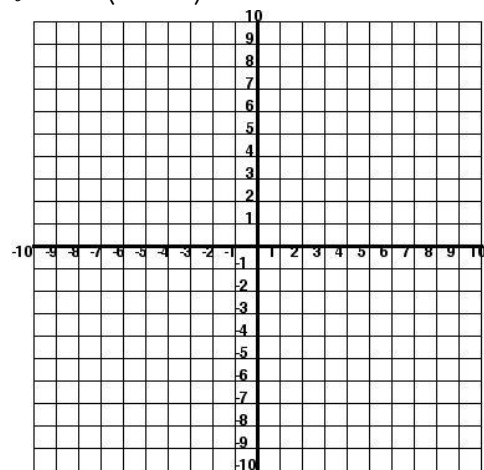| 9.	10.
$f(x) = \sqrt{x+2} - 1$	$f(x) = -(x+3)^2 - 2$

11.	12.
$f(x) = (-x-5)^3 + 2$	$f(x) = -\sqrt{-x+2} + 2$
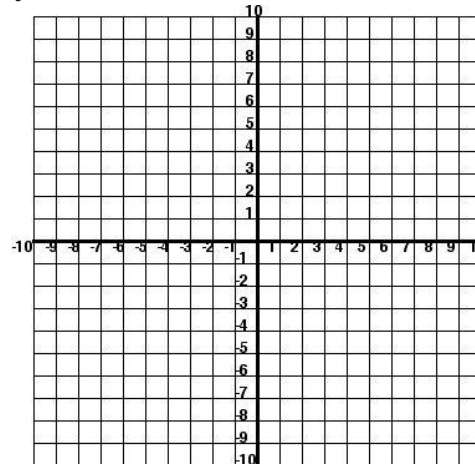
Find the inverse of each function	
13. $f(x) = 6 - 2x$	14. $f(x) = \sqrt{x} - 5$
15. $f(x) = \dfrac{3x - 4}{x + 7}$	16. $f(x) = x^2 - 3$

Determine if the functions are inverses.	
17. $f(x) = 4x + 5 \qquad g(x) = \dfrac{x - 5}{4}$	18. $f(x) = \dfrac{4 - x}{2} \qquad g(x) = 8 + 2x$

How can you determine if a function is a one-to-one function?

19. Use the functions *f(x)* and *g(x)* to answer the following questions

f(x)	*g(x)*

a) *f(3)* =	b) *g(−4)* =	c) $(f + g)(2) =$	d) $(f - g)(-4) =$
e) $(fg)(-2) =$	f) $(f/g)(-3) =$	g) $(f \circ g)(3) =$	h) $(g \circ f)(1) =$

20. A rock thrown off the San Francisco bridge at a velocity of 24 ft/s followed the given path: $h(t) = -16t^2 + 24t + 526$ A. How long did it take the rock to hit the water? B. How tall was the bridge?	21. Other stuff you should review: You should also be able to write an equation for a piecewise function (review #1-5 word problems, still posted on the website on Tues/Wed 10/29 or 10/30. Sketch quadratic functions that require the use of the quadratic formula (so they might have no x-intercepts or decimals that are not nice numbers). Examples from classwork on Tues/Wed 11/19 or 11/20 - #1-6 around the room.

Given the two functions $f(x) = x2 - 3x + 5$ and $g(x) = 4x + 3$ determine each:

22. $(f \circ g)(x) =$	23. $(g \circ g)(x) =$
24. $(g \circ f)(2) =$	25. $(f \circ g)(-3) =$

Determine two functions $f(x)$ and $g(x)$ such that $h(x) = f(g(x))$.

26. $h(x) = \sqrt{2x}$	27. $h(x) = 4\left(\dfrac{1}{2x}\right)^2 + 8\left(\dfrac{1}{2x}\right) - 5$

28. A ball thrown straight up, from 3 meters above the ground, with a velocity of 14 m/s has a path that follows the equation: $h(t) = -4.9t^2 + 14t + 3$ A. Sketch the graph B. When does the ball hit the ground? C. What is the maximum height?	29. $f(x) = \begin{cases} x + 2 & x £ -1 \\ 1 & -1 < x £ 1 \\ 2x - 1 & x > 1 \end{cases}$