Algebra 1 – WH
Quadratics Quiz

name ______________________
date ______________________ period ____

A. Knowing the shape of the graphs from the coefficient of x^2 **(1 point each)**

a. Which graph would be the narrowest? a. $y = 5x^2 + 2$ b. $y = \frac{1}{3}x^2 - 7$ c. $y = 2x^2 - 4$

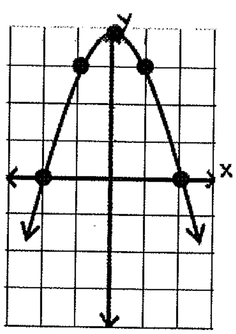
b. Which graph would be the widest? a. $y = \frac{3}{4}x^2 - 6$ b. $y = \frac{1}{2}x^2 + 1$ c. $y = \frac{1}{4}x^2 - 3$

B. What is the y-intercept of $y = 4x^2 + 8x - 2$ **(1 point)**

a. (0,4) b. (0, 8) c. (0, -2) d. (0, -1)

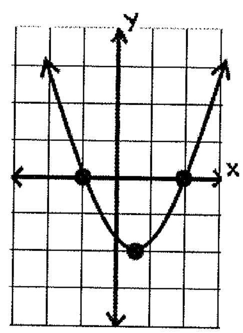
C. Find the vertex of the graph of each quadratic function, say if it's a maximum or minimum, then name the roots for each function and the domain and range: **(3 points each)**

a.



vertex: (0,4)
circle: max or min.
roots:
(-2,0) and (2,0)
domain: all REALS
range: $y \leq 4$

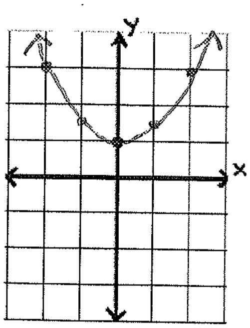
b.



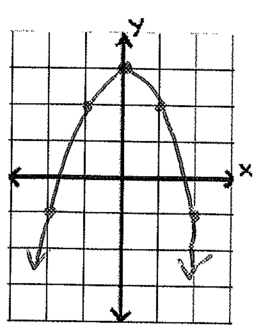
vertex: $(\frac{1}{2}, -2)$
circle: max. or min.
roots:
(-1,0) and (2,0)
domain: all REALS
range: $y \geq -2$

D. Graph each quadratic function using <u>any</u> method. **(2 points each)**
(If you don't know the shortcut, make a table).

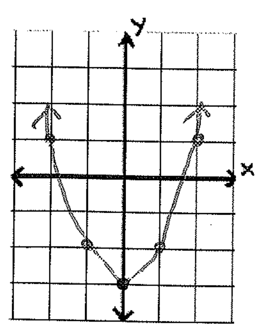
a. $y = \frac{1}{2}x^2 + 1$



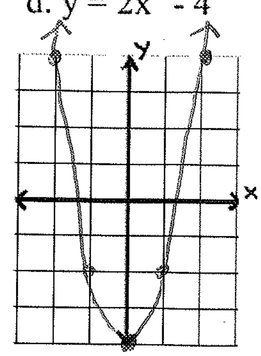
b. $y = -x^2 + 3$



c. $y = x^2 - 3$



d. $y = 2x^2 - 4$

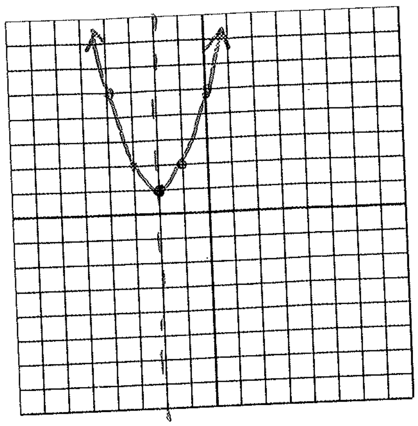


E. If the graph of $y = -x^2 + 3$ is shifted two units down, what will be the equation of the new graph? **(1 point)**

a. $y = -2x^2 + 1$ b. $y = -2x^2 + 3$ c. $y = -x^2 + 1$ d. $y = -x^2 - 2$

F. Use the vertex, the y-intercept, and the pattern to graph each quadratic equation. **(3 points each)**

a. $y = x^2 + 4x + 5$



$a=1 \quad b=4 \quad c=5$

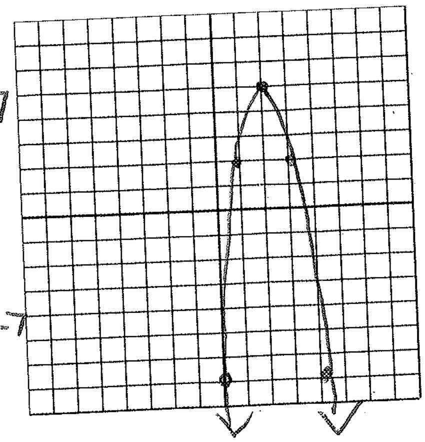
$x = \frac{-4}{2(1)} = -2$

$y = (-2)^2 + 4(-2) + 5$

$y = 4 + -8 + 5$

$y = 1 \qquad (-2, 1)$

b. $y = -3x^2 + 12x - 7$



$a=-3 \quad b=12 \quad c=-7$

$x = \frac{-12}{2(-3)} = 2$

$y = -3(2)^2 + 12(2) - 7$

$y = -12 + 24 - 7$

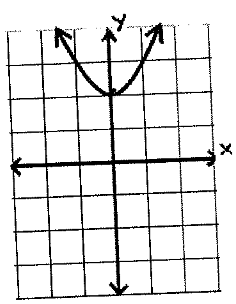
$y = 5 \qquad (2, 5)$

H. Match each graph with its function: **(2 points)**

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

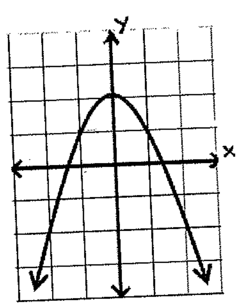
$\frac{-2}{2(1)} = -1$

a.



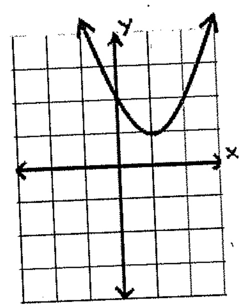
$y = x^2 + 2$

b.



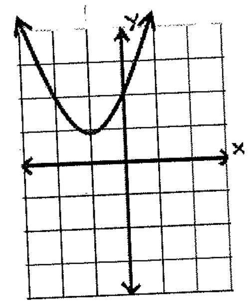
$y = -x^2 + 2$

c.



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

d.



$y = x^2 + 2x + 2$

I. Which point is *not* on the graph represented by $y = x^2 + 3x - 6$? **(1 point)**

(1) $(-6, 12)$
(2) $(-4, -2)$
(3) $(2, 4)$
(4) $(3, -6)$

$36 - 18 - 6$

$9 + 9 - 6$

J. What are the solutions to $(x + 3)(2x - 1) = 0$ **(1 point)**

a. 3 and -3
b. -3 and 1
c. -3 and ½
d. 3 and -½

$x = -3 \quad x = \frac{1}{2}$

$2x - 1 = 0$

$2x = 1$

L. Solve if possible. (2 points each)

a. $3x^2 - 300 = 0$

$3x^2 = 300$

$x^2 = 100$

$x = \pm 10$

b. $x^2 + 64 = 0$

$-64 \quad -64$

$x^2 = -64$

no Solution

c. $x^2 + 17x + 70 = 0$

$(x+10)(x+7) = 0$

$x = -10 \quad x = -7$

70, 10, 7, 17

d. $x^2 - 9x = 36$

$x^2 - 9x - 36 = 0$

$(x+3)(x-12) = 0$

$x = -3 \quad x = 12$

-36, 3, -12, -9

e. $x^2 - 7x = 0$

$x(x+7) = 0$

$x = 0 \quad x = -7$

f. $2x^2 + 4x - 48 = 0$

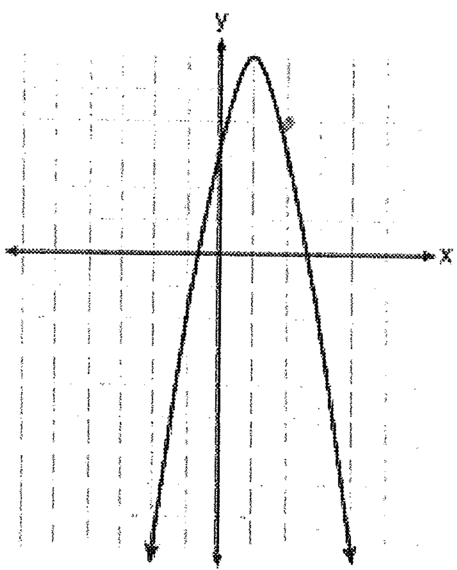
$2(x^2 + 2x - 24) = 0$

$2(x+6)(x-4) = 0$

$x = -6 \quad x = 4$

-24, 6, -4, 2

M. Let f be the function represented by the graph below. **(2 points)**



Let g be a function such that $g(x) = -\frac{1}{2}x^2 + 2x + 2$.
Determine which function has the larger maximum value.
Show or explain your answer.

$a = -\frac{1}{2} \quad b = 2$

$\frac{-2}{2(-\frac{1}{2})} = \frac{-2}{-1} = 2$

$(2, 4)$

$g(2) = -\frac{1}{2}2^2 + 2 \cdot 2 + 2$

$-2 + 4 + 2$

4

$f(x)$ has the larger maximum value.