Algebra **REVIEW 10.1 - 10.3** Name Key

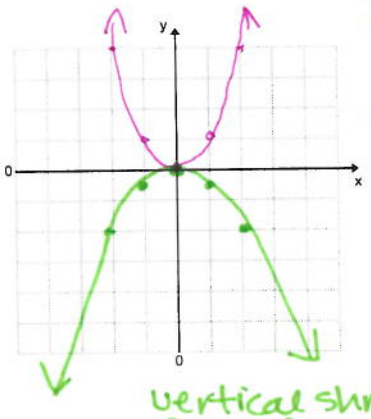
Hour _____

SECTION 10.1

Graph the function and label the vertex and axis of symmetry. Compare the graph to the parent function.

$y = -0.5x^2$

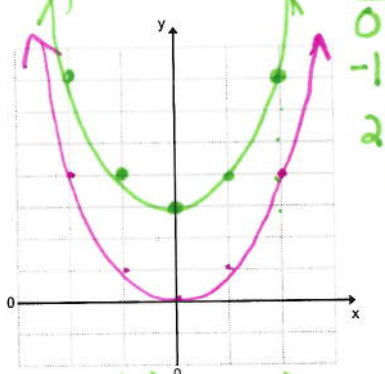
x	y
0	0
2	-2
-1	-.5



vertical shrink + flip of $y = x^2$

$y = x^2 + 3$

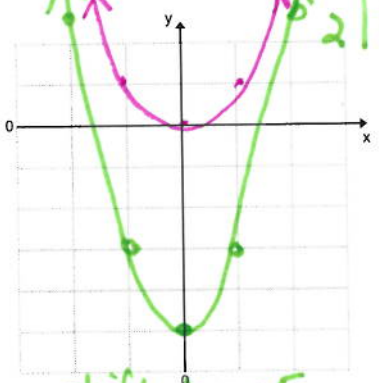
x	y
0	3
-1	4
2	7



shift up 3 of $y = x^2$

$y = 2x^2 - 5$

x	y
0	-5
1	-3
2	3



shift down 5 stretch of 2

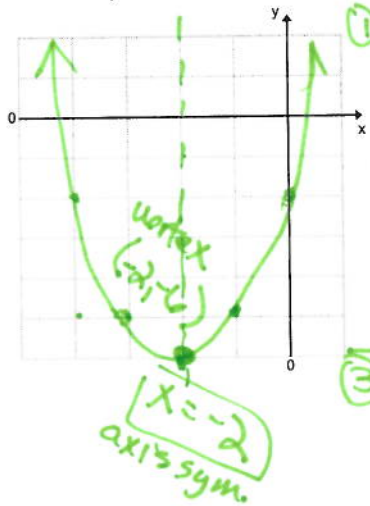
How would the graph of the function $y = -2x^2 + 3$ be affected if the function were changed to $y = -2x^2 - 3$?

instead of shifting up three, it would shift down three on the y-axis

SECTION 10.2

Graph…label the vertex and axis of symmetry

$y = x^2 + 4x - 2$



① $x = -\frac{b}{2a} = -\frac{4}{2 \cdot 1} = -2$

$x = -2$

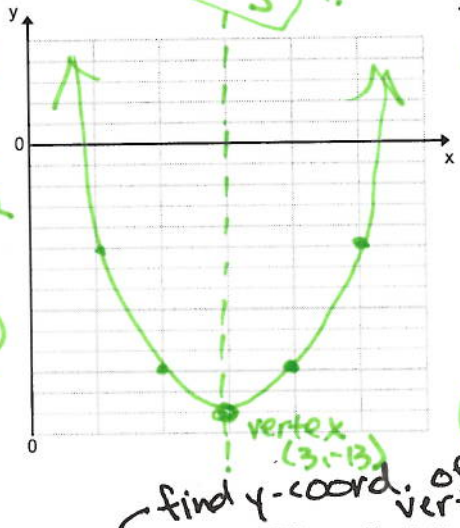
② $y = (-2)^2 + 4(-2) - 2$

$y = 4 + -8 - 2$

$y = -6$ $(-2, -6)$

③

x	y
-1	-5
0	-2



find y-coord. of vertex

$y = 2x^2 - 12x + 5$

① $x = -\frac{b}{2a} = -\left(\frac{-12}{4}\right)$

$x = 3$

② $y = 2(3)^2 - 12(3) + 5$

$y = 18 - 36 + 5$

$y = -13$

vertex $(3, -13)$

③

x	y
4	-11
5	-5

Tell whether the function has a minimum or a maximum value. Then find the value.

$f(x) = x^2 - 6$ minimum

① $x = -\frac{b}{2a}$ $x = -\frac{0}{2 \cdot 1}$ $x = 0$

② $y = 0 - 6$ $(y = -6)$

$f(x) = -5x^2 + 7$ maximum

① $x = -\frac{0}{-10}$ $x = 0$

② $y = -5(0)^2 + 7$ $(y = 7)$

$f(x) = -2x^2 - x + 10$ maximum $y = 9$

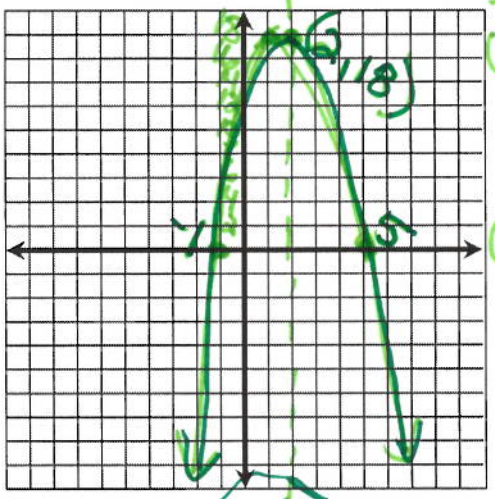
$x = -\left(\frac{-1}{2 \cdot -2}\right) = \frac{1}{2}$

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

INTERCEPT FORM

Graph the quadratic function. Label the vertex, axis of symmetry, and x - intercepts.

$y = -2(x - 5)(x + 1)$



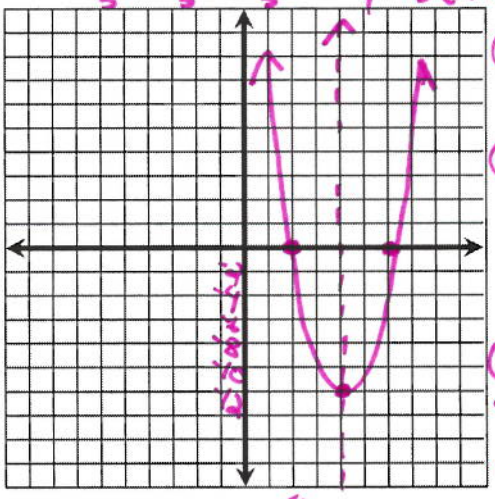
① p = 5 q = -1 x-intcp.

② $\frac{5+1}{2} = 2$ x = 2 axis sym.

③ $y = -2(2-5)(2+1)$
$y = -2(-3)(3)$
$y = 18$ (2, 18) vertex

$y = 3x^2 - 24x + 36$

$y = 3(x^2 - 8x + 12)$
$y = 3(x-6)(x-2)$



① p = 6 & 2 int. q = 2

② $\frac{6+2}{2} = 4$ x = 4 axis sym.

③ $y = 3(4-6)(4-2)$
$y = 3 \cdot -2 \cdot 2$
$y = -12$
(4, -12) vertex

SECTION 10.3

Find the number of solutions for each equation.

$x^2 + 6x = -10$

$x^2 + 6x + 10 = 0$

$\frac{-6 \pm \sqrt{36 - (4 \cdot 1 \cdot 10)}}{2} = \frac{-6 \pm \sqrt{-4}}{2}$ ← no solutions

$x^2 + 6x = -9$

$x^2 + 6x + 9 = 0$
$(x+3)(x+3) = 0$
$x = -3$ one solution

Find the zeros of $f(x) = -x^2 + 2x + 3$.

$y = -1(x^2 - 2x - 3)$
$0 = (x-3)(x+1)$
$x = 3, -1$

Approximate the zeros of $f(x) = x^2 + x - 3$ to the nearest tenth.

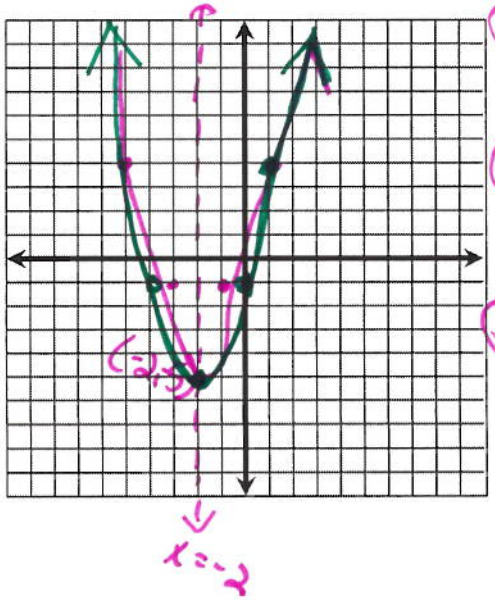
$\frac{-1 \pm \sqrt{1 - (4 \cdot 1 \cdot -3)}}{2} = \frac{-1 \pm \sqrt{13}}{2} = x$

VERTEX FORM

Graph the quadratic function. Label the vertex and axis of symmetry.

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

h = -2 k = -5



① axis sym. x = -2

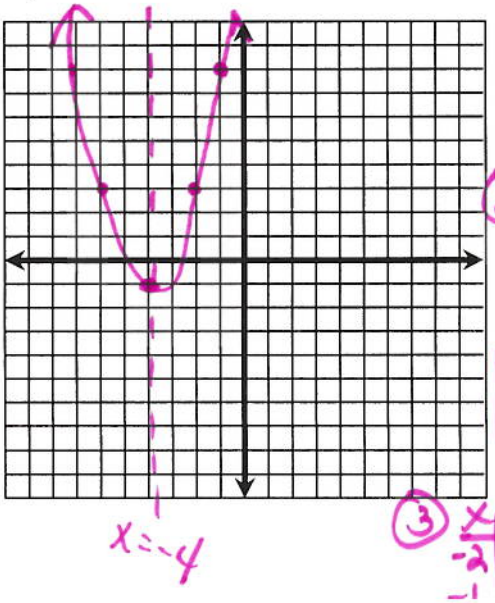
② vertex (-2, -5)

③

x	y
0	-1
1	4

$y = x^2 + 8x + 15$

① $x = -\left(\frac{8}{2}\right) = -4$ x = -4 axis sym.



② $y = (-4)^2 + 8(-4) + 15$
$y = 16 - 32 + 15$
$y = -1$
(-4, -1) vertex

③

x	y
-2	3
-1	