NAME: Key

Assessment Training Practice #2A

1.) Examine the quadratic function below. Label the graph with parts a – g.

a.) Find the y-intercept (0, 8)

b.) What are the different names for the x-intercepts? zeros, roots and solutions

c.) Find the x-intercept(s) (2, 0), (4, 0)

d.) Identify the vertex (3, -1)

e.) Is the vertex a maximum or a minimum? Why? The vertex of (3, -1) is a minimum because it is the lowest point on the graph.

f.) Write the equation of the axis of symmetry $x = 3$

g.) Write an equation for this quadratic function (a = 1 or a = -1) $y = x^2 - 6x + 8$

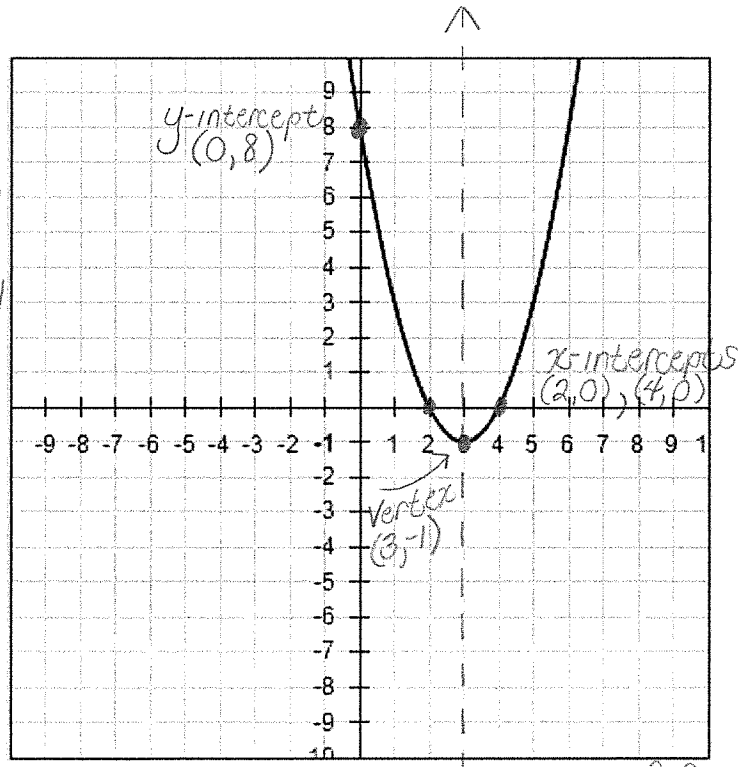
$y = a(x-h)^2 + k$

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

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

$y = x^2 - 3x - 3x + 9 + -1$

$y = x^2 - 6x + 8$



Axis of Symmetry
$x = 3$

2.) Examine the quadratic function below. Label the graph with parts a – f.

a.) Find the y-intercept $(0, 3)$

b.) Find the x-intercept(s)/Zero(s)/ root(s)/ solution(s) $(-3, 0)$, $(1, 0)$

c.) Identify the vertex $(-1, 4)$

d.) Is the vertex a maximum or a minimum? Why? The vertex of $(-1, 4)$ is a maximum because it is the highest point on the graph.

e.) Write the equation of the axis of symmetry $x = -1$

f.) Write an equation for this quadratic function (a = 1 or a = -1) $y = -x^2 - 2x + 3$

$y = a(x-h)^2 + k$

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

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

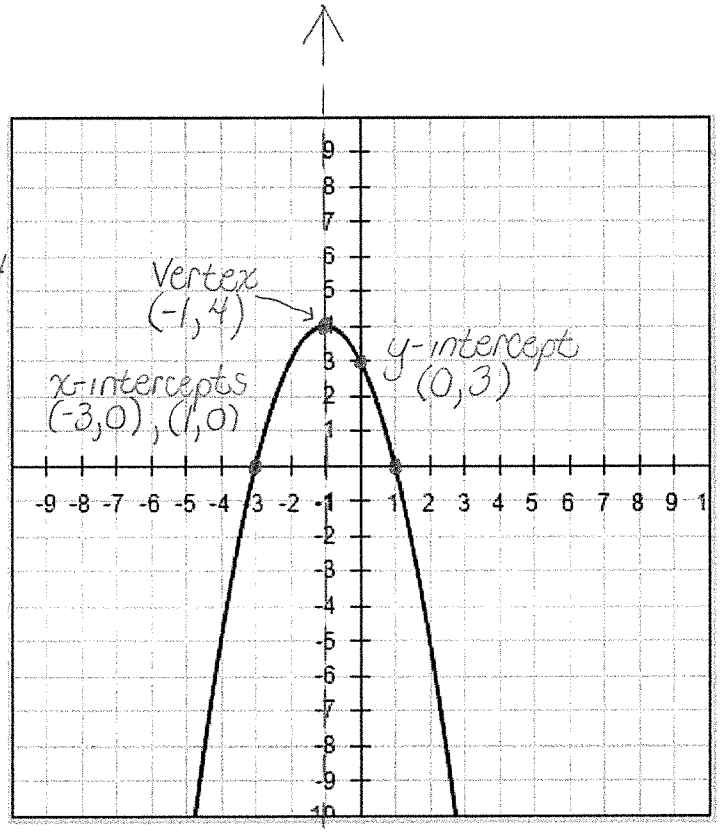
$y = -1(x+1)(x+1) + 4$

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

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

$y = -x^2 - 2x - 1 + 4$

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



3.) Examine the quadratic function below. Label the graph with parts a – f.

a.) Find the y-intercept $(0, -3)$

b.) Find the x-intercept(s)/Zero(s)/ root(s)/ solution(s) $(1, 0)$, $(3, 0)$

c.) Identify the vertex $(2, 1)$

d.) Is the vertex a maximum or a minimum? Why? The vertex of $(2, 1)$ is a maximum because it is the highest point on the graph.

e.) Write the equation of the axis of symmetry $x = 2$

f.) Write an equation for this quadratic function (a = 1 or a = -1) $y = -x^2 + 4x - 3$

$y = a(x - h)^2 + k$

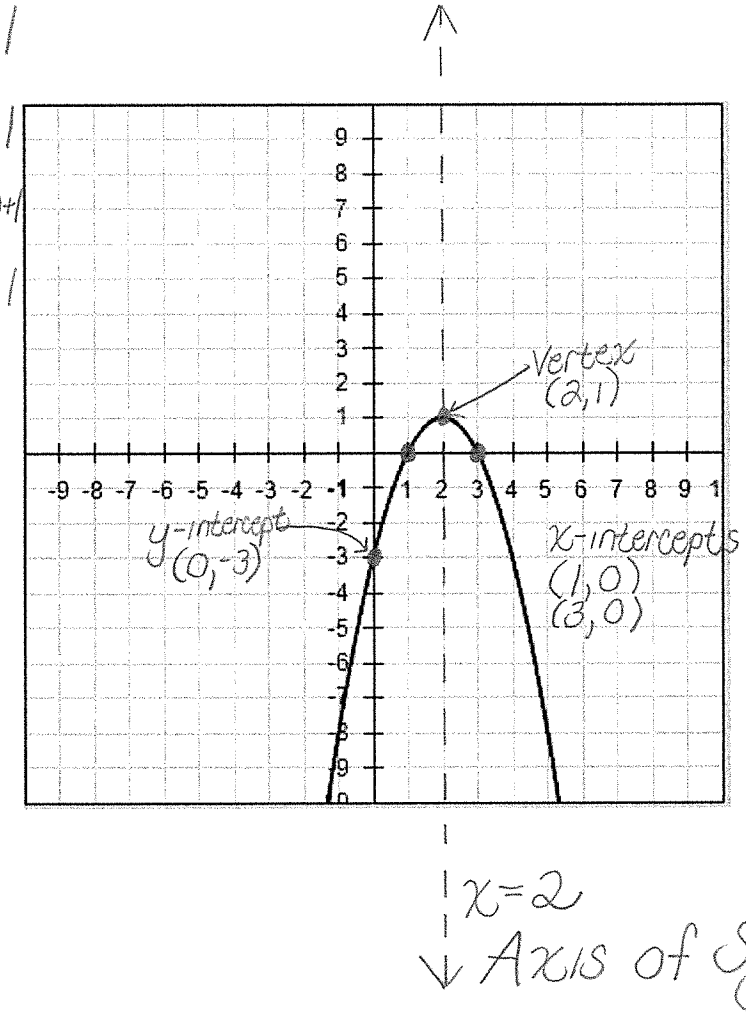
$y = -1(x - 2)^2 + 1$

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

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

$y = -x^2 + 2x + 2x - 4 + 1$

$y = -x^2 + 4x - 3$



4.) Examine the quadratic function below. Label the graph with parts a – f.

a.) Find the y-intercept $(0, -3)$

b.) Find the x-intercept(s)/Zero(s)/ root(s)/ solution(s) $(-3, 0), (1, 0)$

c.) Identify the vertex $(-1, -4)$

d.) Is the vertex a maximum or a minimum? Why? The vertex of $(-1, -4)$ is a minimum because it is the lowest point on the graph.

e.) Write the equation of the axis of symmetry $x = -1$

f.) Write an equation for this quadratic function (a = 1 or a = -1) $y = x^2 + 2x - 3$

$y = a(x-h)^2 + k$

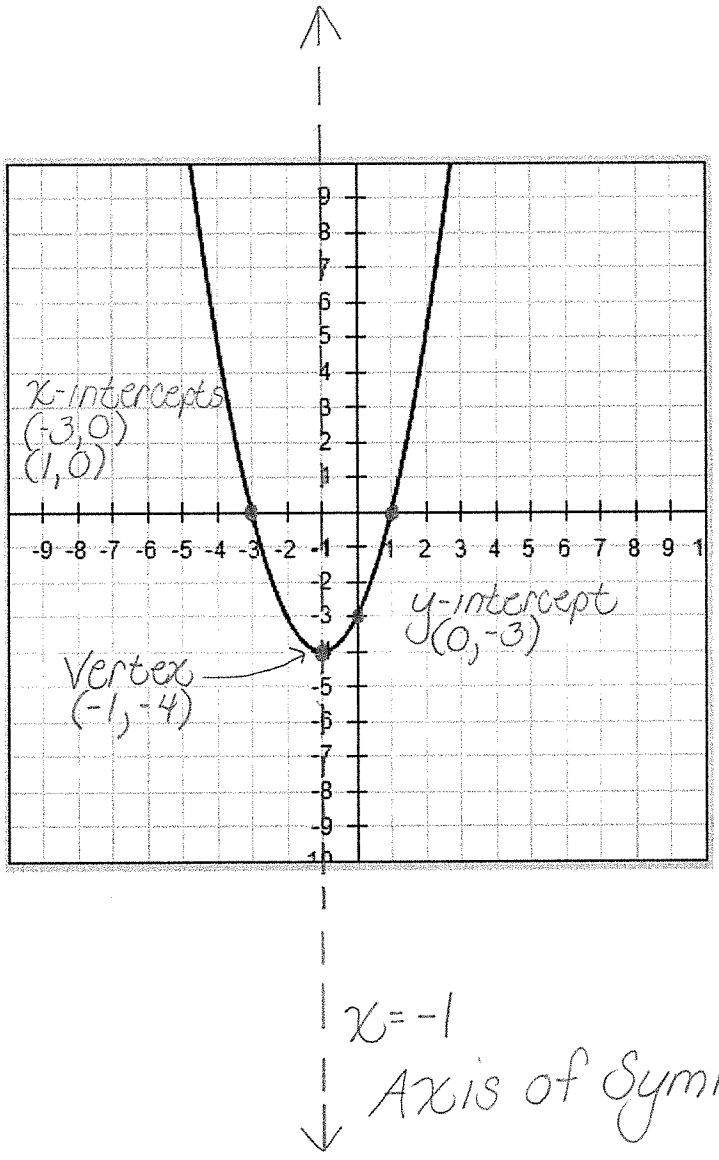
$y = 1(x-(-1))^2 + -4$

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

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

$y = x^2 + 1x + 1x + 1 + -4$

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



Factor each expression for 5 – 8.

5.) $6x^5 + 3x^4 - 9x^2$ GCF: $3x^2$

$3x^2(2x^3 + x^2 - 3)$

6.) $49r^2 - 144$

$7r^2 - 12^2$ $(7r+12)(7r-12)$

7.) $2y^2 - 2y - 112$ GCF: 2

$2(y^2 - y - 56)$ $2(y-8)(y+7)$

8.) $12d^2 - 8d + 1$

12, +, −2, −6, −8

	2d	−1
6d	$12d^2$	$-6d$
−1	$-2d$	1

$(2d-1)(6d-1)$

9.) Explain what can be determined by looking at each form of a quadratic function.

a.) Standard form $y = ax^2 + bx + c$

In the standard form, the value of c represents the y-intercept.

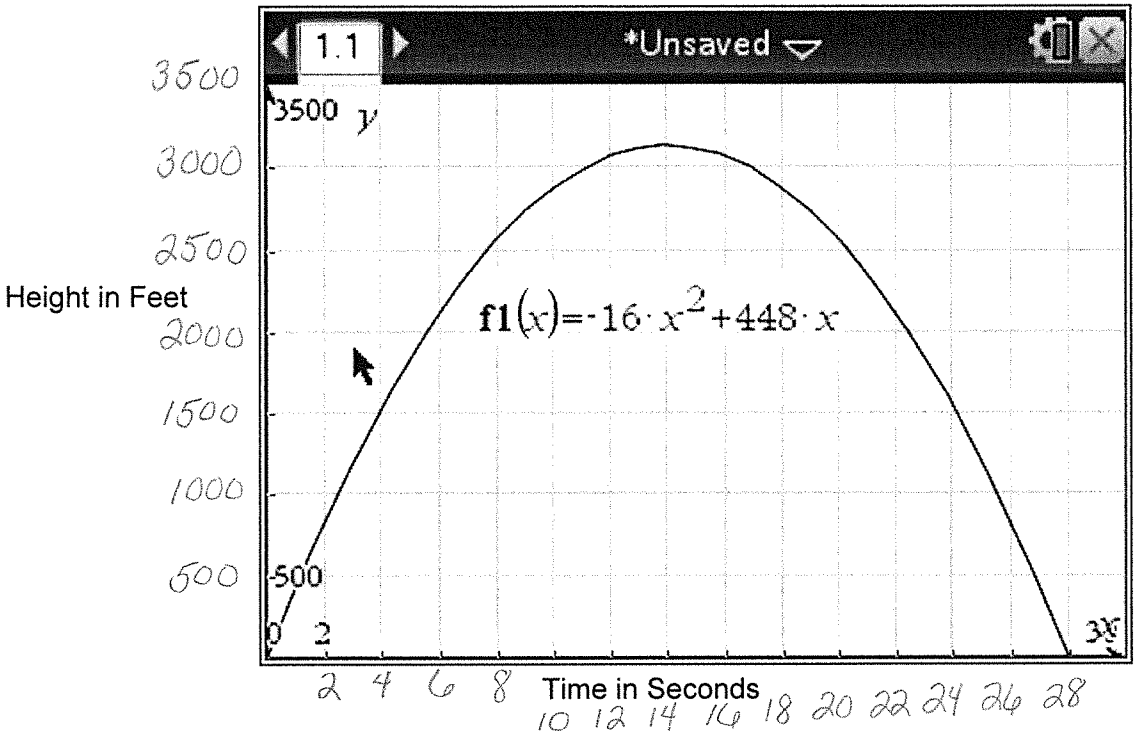
b.) Factored form $y = a(x - p)(x - q)$

In the factored form, you set $x-p=0$ and $x-q=0$ Solve for p and q to obtain the solutions

c.) Vertex form $y = a(x - h)^2 + k$

In the vertex form, the vertex is represented by (h, k). The form inside the parentheses must be x-h. If it is written as x+h, rewrite it as $(x-(-h))^2$.

The following is a graph of the path of a rocket after it is launched.



10.) Explain the real world meaning of the following points. Height is in feet and time is in seconds. $x = \frac{-b}{2a}$ $x = \frac{-448}{-32}$ $x = 14$ $y = -16 \cdot 14^2 + 448 \cdot 14$ $y = 3136$

a.) Vertex (14, 3136) At 14 seconds, the rocket was at the maximum height of 3136 feet.

b.) x-intercept(s) (0, 0) At 0 seconds, the rocket flew 0 feet
(28, 0) At 28 seconds, the rocket hit the ground.

11.) What does the x represent in the function?

Time

12a.) How long does it take for the rocket to reach the ground?

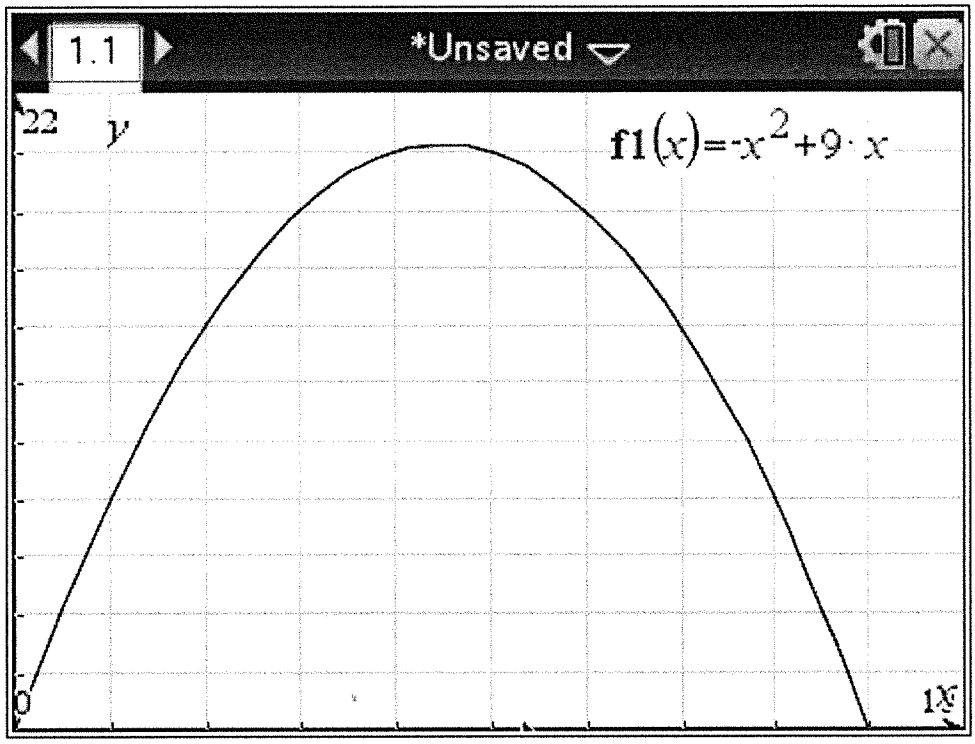
28 seconds

12b.) What is the fall time of the rocket?

14 seconds

13.) Examine the function below.

x	y
0	0
1	8
2	14
3	18
4	20
5	20
6	18
7	14
8	8
9	0



13.) What point is missing from the table?

The vertex

14a.) How can you find the vertex of this graph?

$x = \frac{-b}{2a}$

14b.) Find the vertex. Show your work.

$f(x) = -x^2 + 9x$

$x = \frac{-9}{2 \cdot -1}$

$x = \frac{-9}{-2}$

$x = 4.5$

$f(4.5) = -1(4.5)^2 + 9 \cdot 4.5$

$f(4.5) = 20.25$

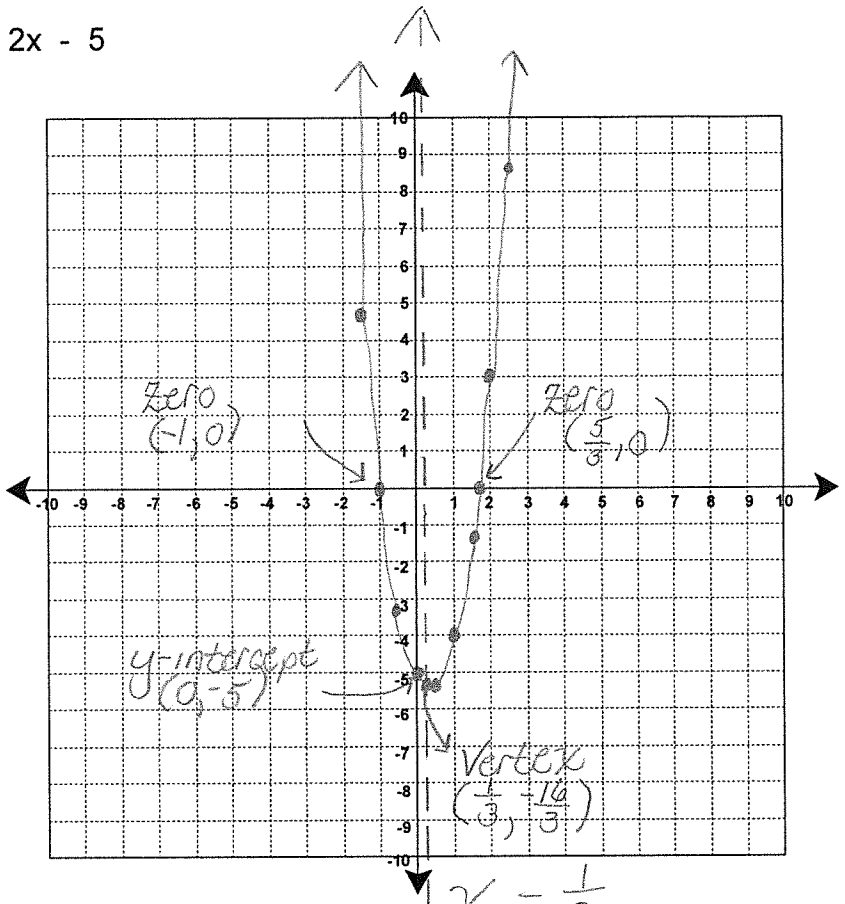
$(4.5, 20.25)$

15.) Explain why you could not see the vertex in the table.

The x values were increasing by increments of one. The x value of 4.5 is between 4 and 5 so we could not see it.

16.) Graph the function: $f(x) = 3x^2 - 2x - 5$

x	y
-1.5	4.75
-1	0
-.5	-3.25
0	-5
.5	-5.25
1	-4
1.5	-1.25
2	3
2.5	8.75



$x = \frac{1}{3}$

✓ Plot the parabola correctly.

✓ Label the coordinates of the vertex on the graph.

If necessary, use the formula.

$x = \frac{-b}{2a}$ $x = \frac{2}{2 \cdot 3}$ $x = \frac{2}{6}$ $x = \frac{1}{3}$

$f\left(\frac{1}{3}\right) = 3\left(\frac{1}{3}\right)^2 - 2\left(\frac{1}{3}\right) - 5$

$f\left(\frac{1}{3}\right) = -\frac{16}{3}\ (-5.3)$

$\left(\frac{1}{3}, -\frac{16}{3}\right)$

✓ Label the coordinates of the y-intercept on the graph.

✓ Show the Axis of Symmetry

✓ Write the equation of the Axis of Symmetry. $x = \frac{1}{3}$

✓ Label the zeros on the graph. $(-1, 0)$ $\left(\frac{5}{3}, 0\right)$

If necessary, use the quadratic formula.

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{2 \pm \sqrt{4 - 4 \cdot 3 \cdot -5}}{2 \cdot 3}$$

$$x = \frac{2 \pm \sqrt{64}}{6}$$

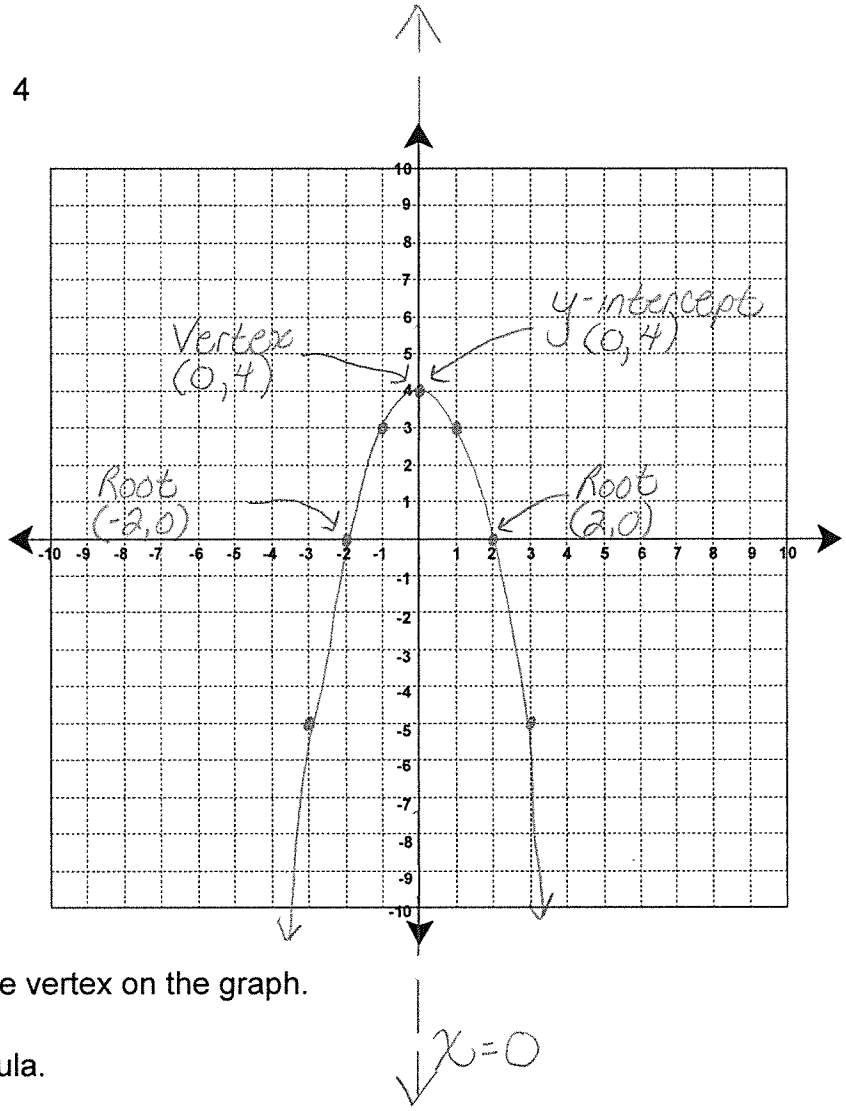
$$x = \frac{2 \pm 8}{6}$$

$x = \frac{2+8}{6}$ $x = \frac{2-8}{6}$

$x = \frac{10}{6}$ or $\frac{5}{3}$ $x = \frac{-6}{6}$ or -1

17.) Graph the function: $f(x) = -x^2 + 4$

x	y
-3	-5
-2	0
-1	3
0	4
1	3
2	0
3	-5



✓ Plot the parabola correctly.

✓ Label the coordinates of the vertex on the graph.

If necessary, use the formula.

(0, 4)

✓ Label the coordinates of the y-intercept on the graph.

✓ Show the Axis of Symmetry

✓ Write the equation of the Axis of Symmetry. $x=0$

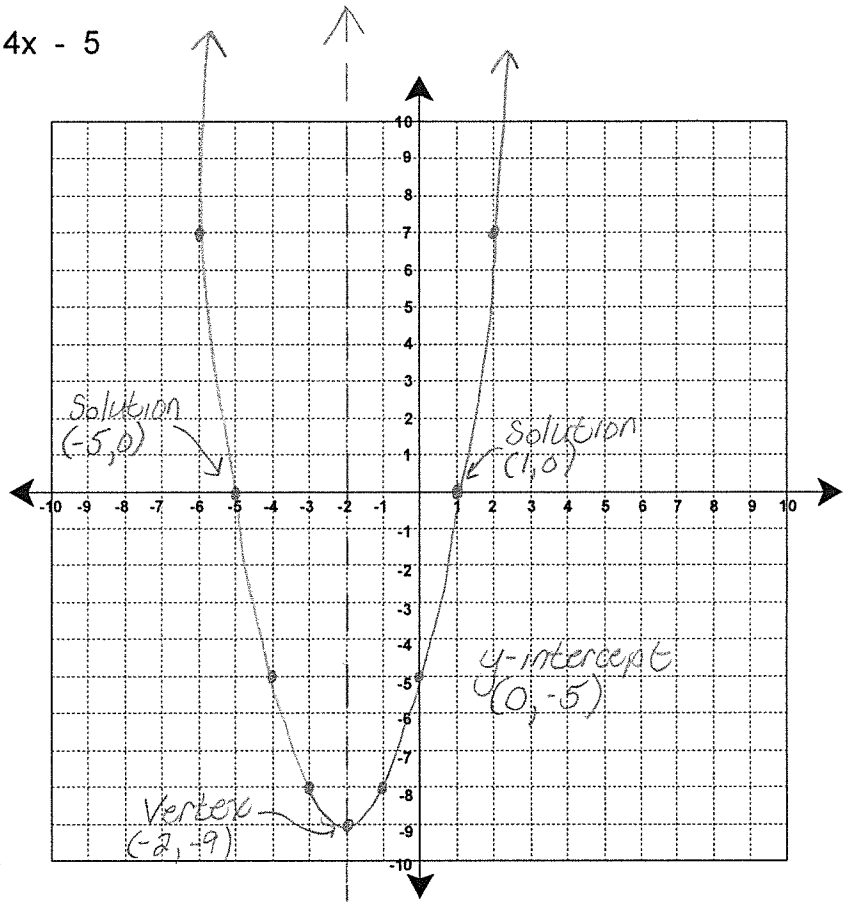
✓ Label the roots on the graph.

If necessary, use the quadratic formula.

(-2, 0) (2, 0)

18.) Graph the function: $f(x) = x^2 + 4x - 5$

x	y
-6	7
-5	0
-4	-5
-3	-8
-2	-9
-1	-8
0	-5
1	0
2	7



✓ Plot the parabola correctly.

✓ Label the coordinates of the vertex on the graph.

If necessary, use the formula.

(-2,-9)

✓ Label the coordinates of the y-intercept on the graph.

✓ Show the Axis of Symmetry

✓ Write the equation of the Axis of Symmetry. $x = -2$

✓ Label the solutions on the graph.

If necessary, use the quadratic formula.

(-5,0) (1,0)