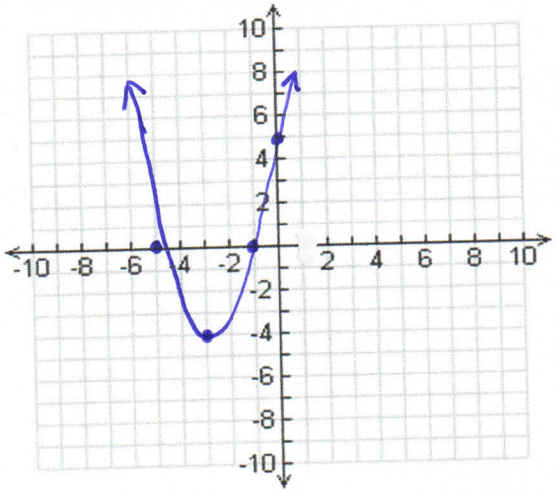
PRACTICE QUESTIONS: Vertex Form

Date: Solutions

For the following parabolas:

- Graph the parabola and the axis of symmetry
- ON THE GRAPH, label the vertex, x-intercepts, y-intercept, the maximum or minimum value.
- Complete the key features of the quadratic relationship in the table provided.

1. Graph the parabola $y = (x + 3)^2 - 4$



The coordinates of the vertex	(-3,-4)
The equation of the axis of symmetry	x = -3
Does the parabola open up or down?	up
The maximum or the minimum value	min = -4
The y-intercept	5

x-intercepts -5 and -1

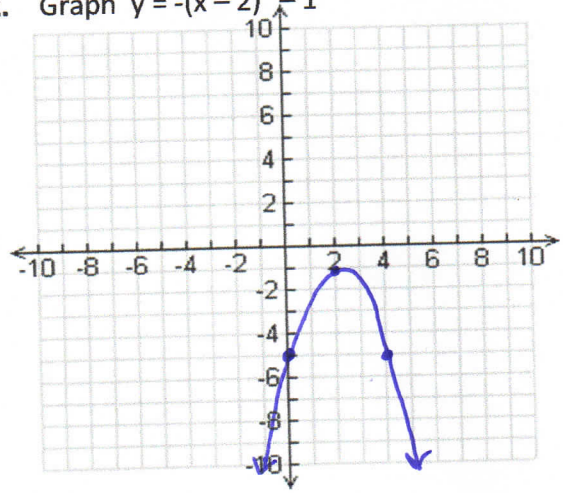
a) How did you know the direction of the opening by looking at the equation only? a is positive

b) How did you know the vertex of the parabola by looking at the equation only? h and k value

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

$\therefore (-3,-4)$

2. Graph $y = -(x - 2)^2 - 1$



The coordinates of the vertex	(2,-1)
The equation of the axis of symmetry	x = 2
Does the parabola open up or down?	down
The maximum or the minimum value	max = -1
The y-intercept	-5

x-intercepts None

a) How did you know the direction of the opening by looking at the equation only? a is negative

b) How did you know the vertex of the parabola by looking at the equation only? h and k value

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

$\therefore (2,-1)$

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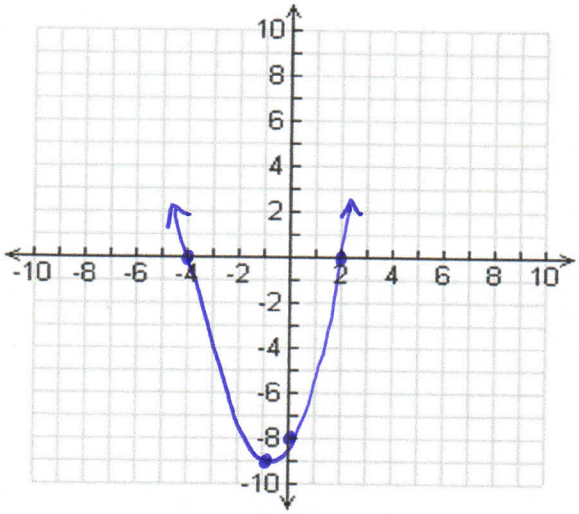
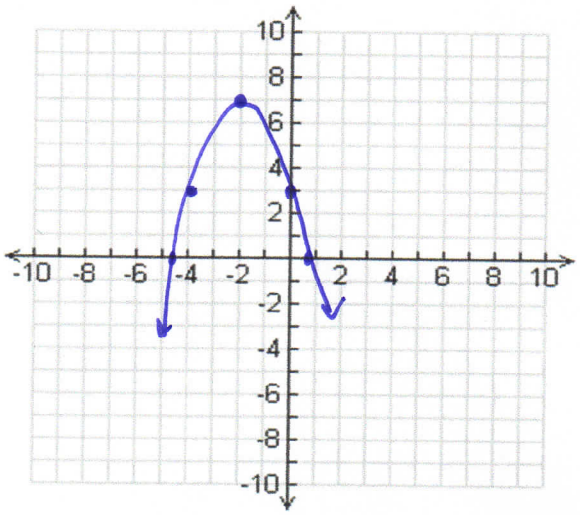
c) Graph $y = (x + 1)^2 - 9$



The coordinates of the vertex	(-1, -9)
The equation of the axis of symmetry	x = -1
Does the parabola open up or down?	up
The maximum or the minimum value	min = -9
The y-intercept	-8

The x-intercepts -4 and 2

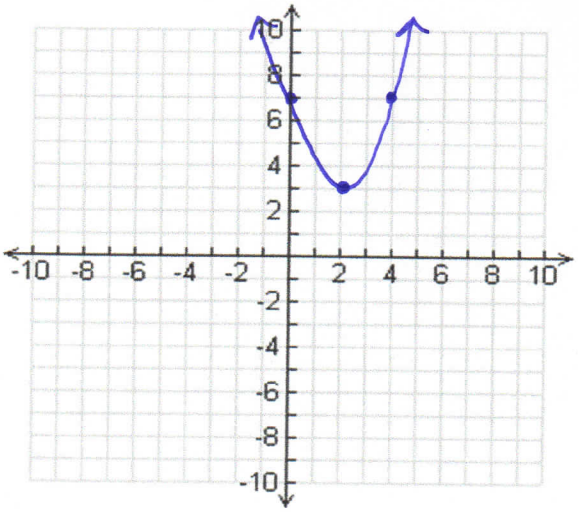
d) Graph $y = -(x + 2)^2 + 7$



The coordinates of the vertex	(-2, 7)
The equation of the axis of symmetry	x = -2
Does the parabola open up or down?	down
The maximum or the minimum value	max = 7
The y-intercept	3

The x-intercepts Approx: -4.7 and 0.7

e) Graph $y = (x - 2)^2 + 3$



The coordinates of the vertex	(2, -3)
The equation of the axis of symmetry	x = 2
Does the parabola open up or down?	up
The maximum or the minimum value	min = 3
The y-intercept	7

The x-intercepts None.