

Algebra 1

What do you know about Quadratics?

Name _____

Hour _____

1) For $f(x) = 3(x + 2)^2 - 5$

- a. Given an equation in vertex form, how do you identify the vertex?
- b. Identify the vertex.
- c. How is possible to identify the line of symmetry of a parabola without seeing a graph?
- d. Identify the line of symmetry.
- e. Does the graph open up or down? How do you know?
- f. Did the vertex move left or right compared to $y = x^2$? How far?
- g. Did the vertex move up or down compared to $y = x^2$? How far?

2) For $f(x) = -4(x - 5)^2 + 3$

- a. Identify the vertex. a) _____
- b. Identify the line of symmetry. b) _____
- c. Does the graph open up or down? c) _____
- d. How far left or right did the graph move compared to $y = x^2$? d) _____
- e. How far up or down did the graph move compared to $y = x^2$? e) _____

3) For $f(x) = 2x^2 - 2x - 24$

- a. Given an equation in standard form, how do you identify the vertex?
- b. Identify the vertex.
- c. Is your process for finding the line of symmetry different when an equation is in standard form? Describe the process.
- d. Identify the line of symmetry.
- e. Does the graph open up or down? How do you know?
- f. Did the vertex move left or right compared to $y = x^2$? How far?
- g. Did the vertex move up or down compared to $y = x^2$? How far?

4) For $f(x) = -2x^2 + 7x + 4$

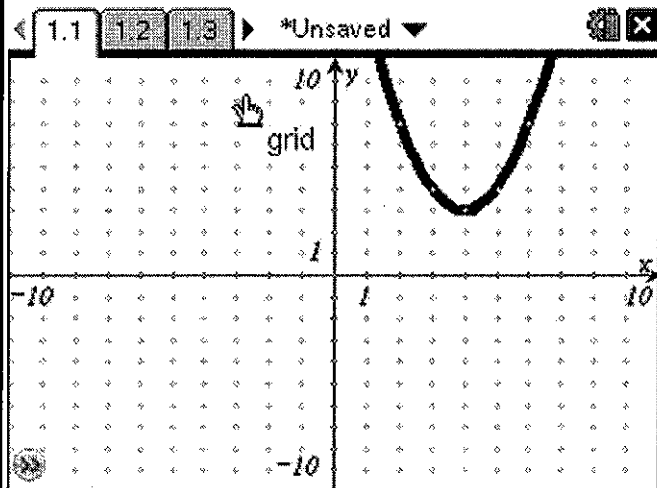
- a. Identify the vertex. a) _____
- b. Identify the line of symmetry. b) _____
- c. Does the graph open up or down? c) _____
- d. How far left or right did the graph move compared to $y = x^2$? d) _____
- e. How far up or down did the graph move compared to $y = x^2$? e) _____

5) A ball is thrown upwards from a height of 20 m with an initial velocity of 15m/s. The height of the ball in meters is modeled by the function $f(t) = -4.9t^2 + 15t + 20$, where t = time in seconds.

a. Describe the shape of the graph that represents this situation. Why does this shape make sense? Use information from the equation to back up your answer. Be sure to discuss the changes in the height of the ball over time

b. Find the maximum height of the ball. What does this value mean graphically?

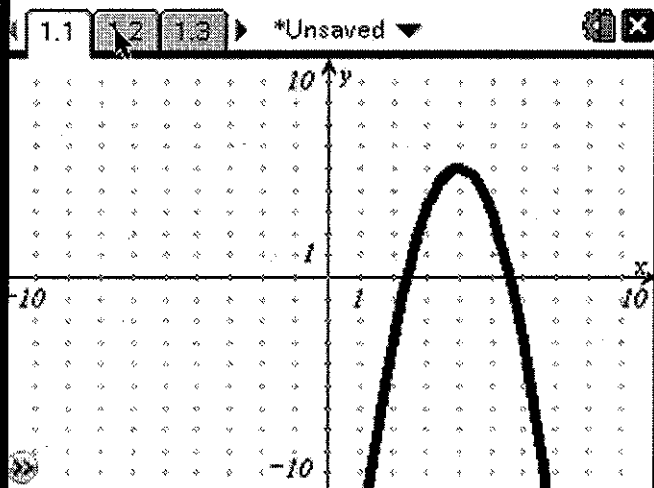
6) Given the graph and table below, write a function of this graph in vertex form, $f(x) = a(x - h)^2 + k$.



Input	output
0	19
1	12
2	7
3	4
4	3
5	4
6	7

6) _____

7) Given the graph and table below, write a function of this graph in vertex form, $f(x) = a(x - h)^2 + k$.



Input	Output
0	-27
1	-13
2	-3
3	3
4	5
5	3
6	-3

7) _____