Acc Algebra I | Unit 6 Extra Test Review

Name _____ Date _____

Give the characteristics for the given quadratic:

1) Domain: $(-\infty, \infty)$ Range: $[-2, \infty)$ Vertex Form: $y = 2(x+2)^2 - 2$

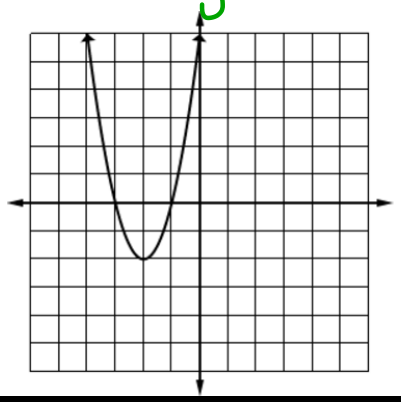
Vertex: $(-2, -2)$ Axis of Symmetry: $x = -2$

Solution(s): $x = -1, -3$ Y Intercept(s): $(0, 6)$

Increasing: $(-2, \infty)$ Decreasing: $(-\infty, -2)$

End Behavior: $x \to \infty$, $f(x) \to \infty$ $x \to -\infty$, $f(x) \to \infty$

ROC [-4, -2] -4 ROC $-1 \le x \le 4$ 14



2) Give the transformations for the following quadratic: $f(x) = -\frac{1}{2}(x+5)^2 - 7$

* Reflect x-axis * Vertical shrink 1/2 * Left 5 * Down 7

Convert each of the equations from Standard to Vertex Form, or vice-versa. <u>You must show your work to receive credit!</u>

3) $f(x) = 4x^2 - 16x - 5$

$f(x) = 4(x-2)^2 - 21$

4) $f(x) = -3(x-1)^2 + 6$

$y = -3x^2 + 6x + 3$

Solve the following problems.

5) You launch a model rocket with an initial speed of 38 feet per second. The launch can be modeled using the formula $h(t) = -16t^2 + vt$. <u>When does it reach its maximum height?</u>

It will reach a max height in 1.19 seconds

6) April shoots an arrow upward at a speed of 134 feet per second from a platform. The pathway of the arrow can be represented by the equation $h(t) = -16t^2 + 134t + 12$, where h is the height and t is the time in seconds. <u>Describe what the arrow is doing at 3 seconds.</u>

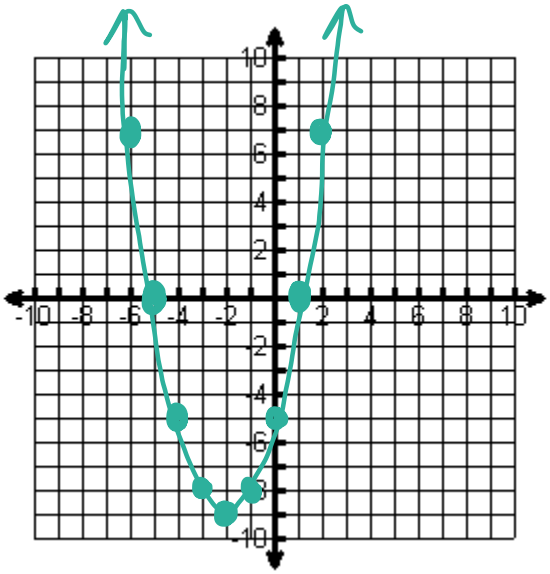
At 3 seconds the arrow is @ 270ft + going up!

7) A missile is launched along the path determined by the equation $f(x) = -4x^2 + 72x$, where $f(x)$ is the height of the missile in feet x seconds after it has been launched. A plane is flying at a height of 300 feet. Is the plane in danger? Why or why not?

yes, the plane is in danger @ 300ft b/c the missile reaches 324ft.

Sketch the graph by hand for the given quadratic:

8) $x^2 + 4x = 5$



Find the point(s) of intersection for the following system:

9) $f(x) = -3x^2 + 6x + 1$
$g(x) = -6x + 10$

$-3x^2 + 6x + 1 = -6x + 10$

$0 = 3x^2 - 12x + 9$

(1, 4)
(3, -8)

Additional Topics:

- Graph a quadratic given vertex **OR** standard form
- Comparing quadratics in different forms (chart vs. graph vs. equation)