

Graphing Quadratic Functions Homework

Directions: Be sure to show all work, communicate your thought process, and justify your reasoning. Remember to check that your answers are complete, correct, and reasonable.

1. Describe what x-intercepts and y-intercepts are, in your own words.
2.
 - a. Describe the three forms of equations for quadratic functions.
 - b. Choose two of the forms, and describe which aspects of the graph are easiest to identify in each form.
3. For each function, sketch a graph on graph paper. Then identify each of the following aspects:

✦ the vertex

✦ the axis of symmetry

✦ the y-intercept

✦ x-intercepts (how many if given vertex form, and the exact points if given intercept form)

✦ standard form of the function

a. $f(x) = (x + 7)(9x - 3)$

b. $f(x) = -2(x + 1)^2 - 5$

c. $f(x) = -\frac{1}{2}(x - 3)^2 + 4$

d. $f(x) = (4x + 24)(x + 6)$

e. $f(x) = \frac{1}{4}(x + 2)^2 - 2$

f. $f(x) = 3(x - 3)^2 + 8$

g. $f(x) = (8x + 16)(8x + 16)$

h. $f(x) = (4x + 2)(4x - 2)$

Selected Solutions

2.

Vertex form: $f(x) = a(x - h)^2 + k$

The vertex is at the point (h,k) . The value of a causes the graph to stretch. This form makes it easiest to identify the vertex (h,k) and the axis of symmetry $(x = h)$.

Standard form: $f(x) = ax^2 + bx + c$

This form makes it easiest to identify the y-intercept, which is the point $(0,c)$.

Intercept form: Product of two linear binomials. This form makes it easiest to identify the x-intercepts, using the zero product property.

3.

b. $f(x) = -2(x + 1)^2 - 5$

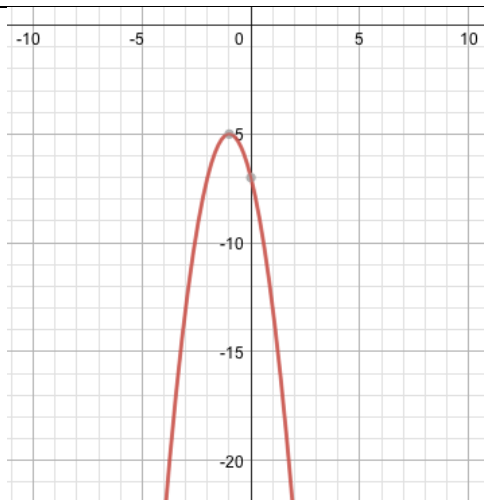
Vertex: $(-1, -5)$

AOS: $x = -1$

x-intercepts: none

y-intercept: $(0, -7)$

standard form: $-2x^2 - 4x - 7$



d. $f(x) = (4x + 24)(x + 6)$

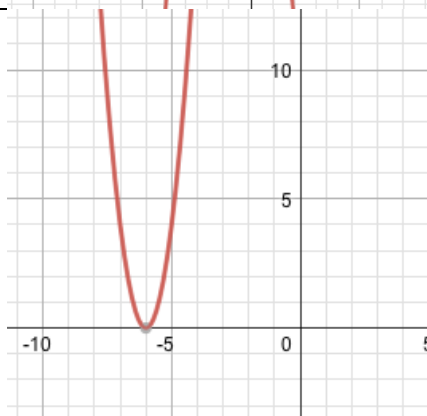
Vertex: $(-6, 0)$

AOS: $x = -6$

x-intercepts: $(-6, 0)$

y-intercept: $(0, 144)$

standard form: $4x^2 + 48x + 144$



Name: _____

Date: _____

Unit 5 Homework

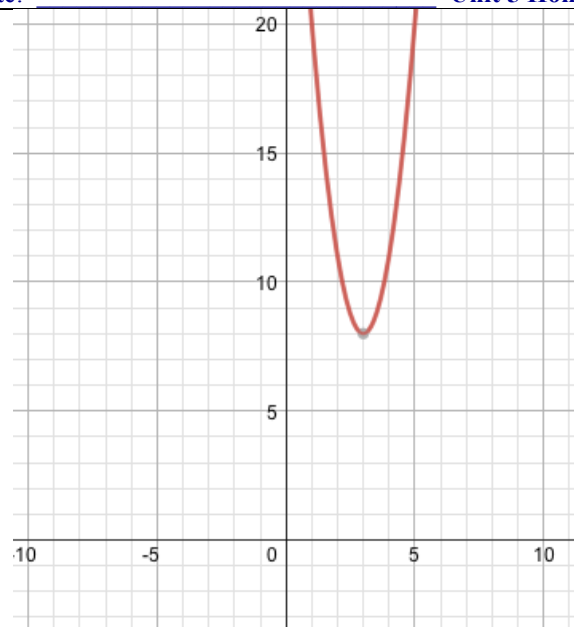
f. $f(x) = 3(x - 3)^2 + 8$

Vertex: (3,8)

AOS: $x = 3$

x-intercepts: none

y-intercept: (0,35)

standard form: $3x^2 - 18x + 35$ 

h. $f(x) = (4x + 2)(4x - 2)$

Vertex: (0, -4)

AOS: $x = 0$ x-intercepts: $(-\frac{1}{2}, 0)$ and $(\frac{1}{2}, 0)$

y-intercept: (0, -4)

standard form: $16x^2 + 16x - 4$ 