

Chapter 2: Quadratic Functions

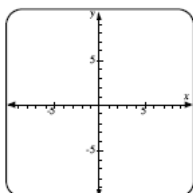
Lesson 2: Graphing Quadratics Continued

Ⓢ Question #1: Quadratic Function in Standard Form

Reference Q.13717

The graph of a quadratic function has vertex $(3, -4)$ and passes through the point $(4, 1)$.

- Find the equation of the function in standard form.
- Rewrite the equation in general form.
- Use a graphing calculator to sketch the graph and determine the x and y -intercepts of the graph of the function. Answer to the nearest hundredth if



necessary.

Ⓢ Question #2: Equations in Standard Form

Reference Q.13718

In each case, write an equation in standard form for the parabola with the given vertex and passing through the given point.

- vertex $(7, -6)$, point $(9, -4)$
- vertex $(-2, 5)$, point $(-4, 21)$
- vertex $(-1, 0)$, point $(-5, -12)$
- vertex $(3, -8)$, y -intercept is 10

Ⓢ Question #3: Finding the equation of a parabola in various forms

Reference Q.13719

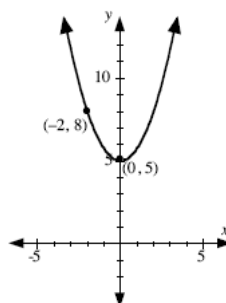
The graph of a quadratic function has a vertex at $(\frac{5}{3}, 1)$ and one x -intercept is $\frac{2}{3}$.

- Determine the equation of the function in standard form.
- Determine the equation of the function in general form.
- State the other x -intercept.
- State the domain and range of the function.
- State the equation of the axis of symmetry of the graph.

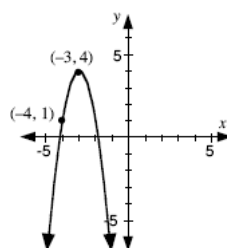
Ⓢ Question #4: Writing Quadratic Equations in Standard Form

Reference Q.13721

Write an equation of the form $y = a(x - p)^2 + q$ for each parabola.



a.



b.

Ⓢ Question #5: Finding vertex of a parabola

Reference Q.13723

The parabola with equation $y = a(x - 2)^2 + q$ passes through the points $(-2, 5)$ and $(4, -1)$.

Determine the coordinates of the vertex of the parabola.

Ⓢ Question #6: Finding vertex of a parabola

Reference Q.13724

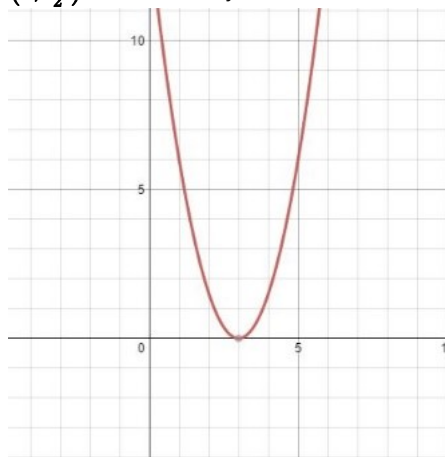
The graph of the function with equation $y = a(x + 5)^2 + q$ passes through the points $(-6, 2)$ and $(-3, 20)$.

Determine whether the function has a maximum or minimum value and state the value.

Ⓢ Question #7: Question 11019

Reference Q.11019

Write the equation of a parabola with vertex $(3, 0)$ that goes through the point $(0, \frac{27}{2})$ and state the key features.



⑧ **Question #8: Question 11020**

Reference Q.11020

Find a quadratic function that has a vertex at $(-2, -4)$ and passes through the origin $(0, 0)$ and get the x and y-intercept(s).

⑧ **Question #9: Question 11018**

Reference Q.11018

What is the equation of the quadratic function graphed below, and what are the x-intercepts?



⑧ **Question #10**

Reference Q.11021

Find the x and y-intercept(s) of $y = (x - 1)^2 - 2$.

⑧ **Question #11: Finding x and y intercepts of each parabolas**

Reference Q.13720

Determine, as exact values, the x and y -intercepts of the graph of the following functions.

- $f(x) = (x - 4)^2 - 16$
- $f(x) = -3(x + 2)^2 + 3$
- $f(x) = 2(x - 6)^2 - 6$
- $f(x) = -\frac{1}{4}(x + 1)^2 + 5$

⑧ **Question #12: Finding x and y intercepts of a parabola**

Reference Q.13722

A function of the form $p(x) = ax^2 + q$ has two x -intercepts, one of which is 9. Determine the other x -intercept and explain how you arrived at your answer.

⑧ **Question #13: Fill in the table**

Reference Q.13709

Complete the following table.

Function	Vertex	Max/Min Value	Equation of Axis of Symmetry	Domain	Range
$y = 3x^2$					
$y = 2x^2 + 1$					
$y = -(x + 7)^2$					
$y - 10 = (x + 5)^2$					
$y + 3 = -3(x - 1)^2 + 2$					

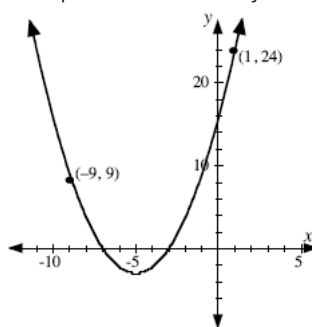
Reminder: $x \in \mathbb{R}$ means: "x is in the set of all real numbers".

⑧ **Question #14: Multi-parts Quadratic Function Problem**

Reference Q.13725

The graph of a quadratic function is shown.

The equation of the axis of symmetry is $x = -5$.



- Find the equation of the graph of the function in standard form.
- Find, algebraically, the x - and y -intercepts of the graph.
- State the domain and range.

⑧ **Question #15: Finding the value a of a parabola**

Reference Q.13726

The parabola with equation $y = a(x - p)^2 + q$ has a maximum value of 8. The line $x = 2$ is the axis of symmetry of the parabola. If the graph passes through the origin, then the value of a is

- 2
- $\frac{1}{32}$
- 2
- $-\frac{1}{32}$

⑧ **Question #16: Finding a value of a quadratic equation**

Reference Q.13727

The graph of the function $g(x) = -2(x - 3)^2 + q$ passes through the point $(-5, -2)$.

The value of q , to the nearest whole number, is ____.

⑧ **Question #17: x intercept of a parabola**

Reference Q.13728

The graph of a function of the form $f(x) = a(x + 2)^2 - 7$ has two x -intercepts, one of which is -6.5 . The other x -intercept, to the nearest tenth, is ____.

⑧ **Question #18**

Reference Q.11031

Using a graphing utility, determine the vertex of the parabola $f(x) = -x^2 + 3x - 12$, and its direction of opening.

⑧ **Question #19**

Reference Q.11024

Using a graphing utility, find the maximum or minimum of $y = x^2 + 3x - 10$.

⑧ **Question #20**

Reference Q.11025

Using a graphing utility, find axis of symmetry of $y = x^2 + 5x + 8$.

⑧ **Question #21: Transformations**

Reference Q.13706

Write the coordinates of the image of the point $(-2, 4)$ on the graph $y = x^2$ when each of the following transformations is applied:

- a. a horizontal translation of 2 units to the left
- b. a translation of 3 units up and 11 units right

⑧ **Question #22: Quadratic functions**

Reference Q.13730

After a combination of a horizontal and a vertical translation, the graph of $y = x^2$ has an image graph with a vertex at $(2, -6)$. Describe the translations