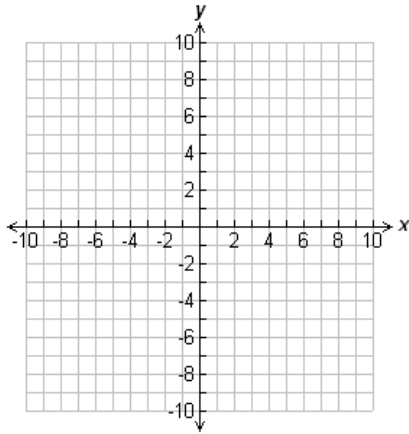


Part One: Graphing Quadratics

Graph the following quadratic functions.

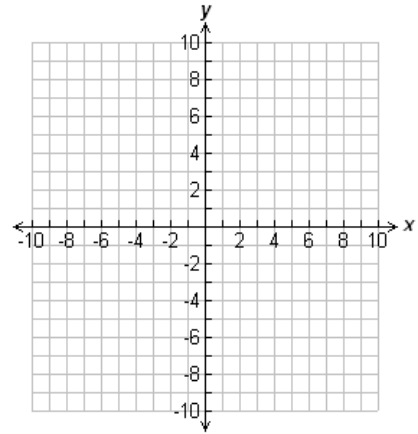
1) $f(x) = -x^2 + 6x - 8$

x	$f(x)$



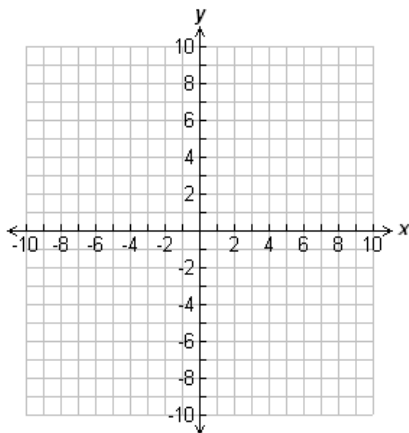
2) $f(x) = 2x^2 - 8x + 3$

x	$f(x)$



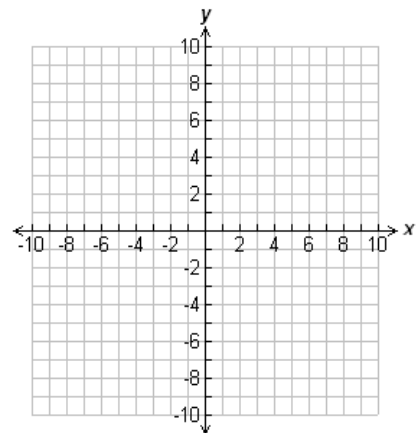
3) $f(x) = \frac{1}{2}(x - 6)^2 + 4$

x	$f(x)$



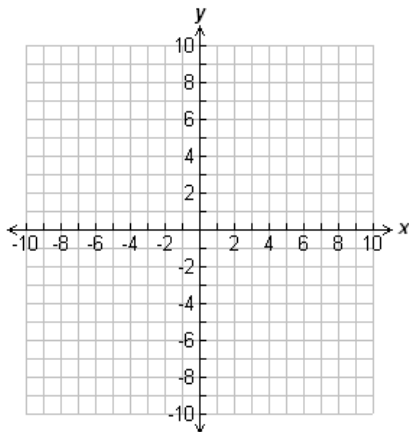
4) $f(x) = x^2 - 3$

x	$f(x)$



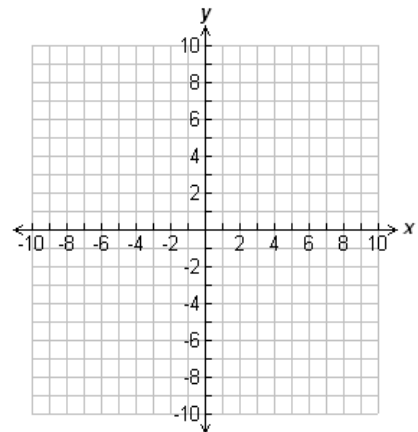
5) $f(x) = (x + 2)^2 - 1$

x	$f(x)$



6) $f(x) = -4x^2 + 8$

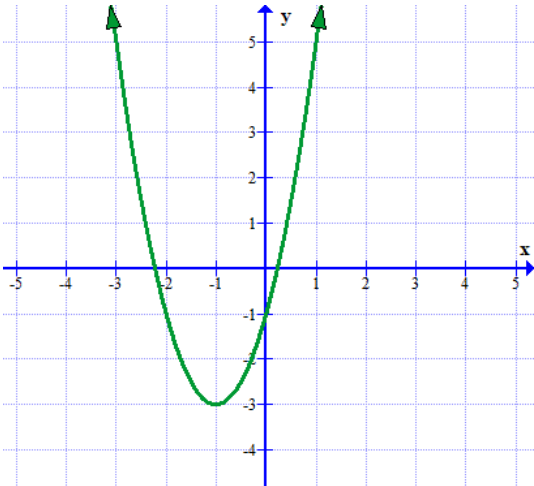
x	$f(x)$



Part Two: Characteristics of Graphs

Identify the listed characteristics for each graph.

7)



Domain:

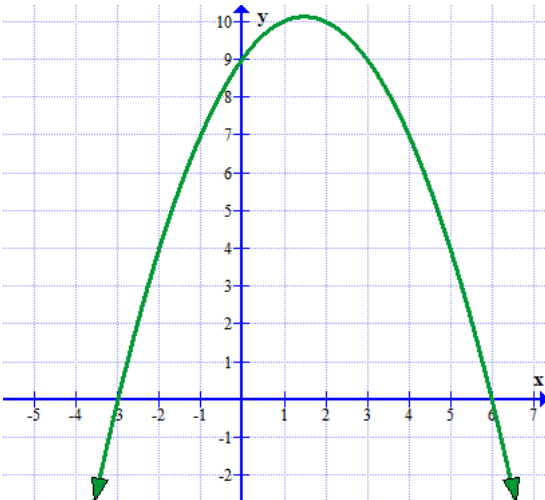
Range:

Vertex:

Extrema/extrema value:

Axis of Symmetry:

8)



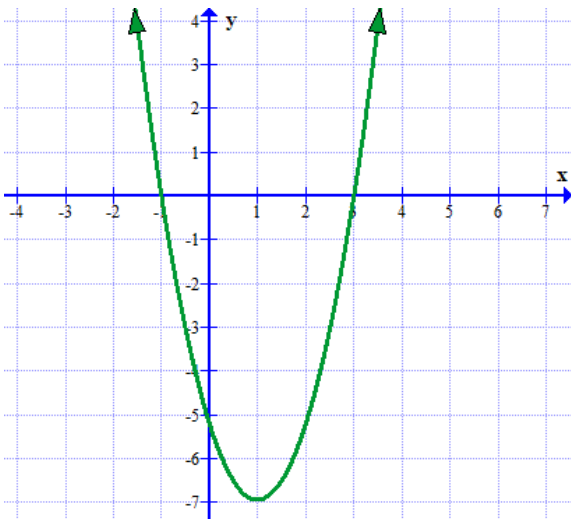
Y-Intercept:

X-Intercept(s):

Solution(s):

Extrema type:

9)



Domain:

Range:

Vertex:

Axis of Symmetry:

Y-Intercept:

X-Intercept(s):

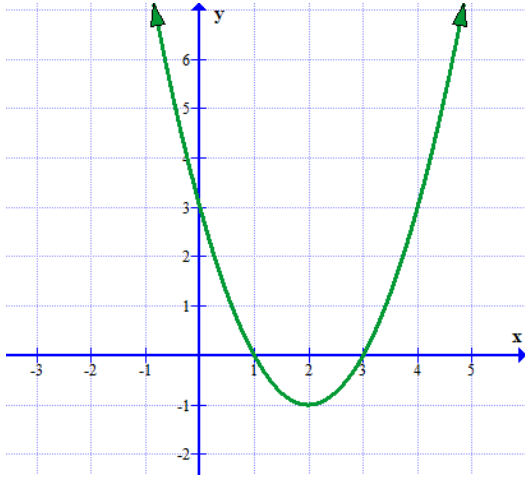
Extrema/extrema value:

Solution(s):

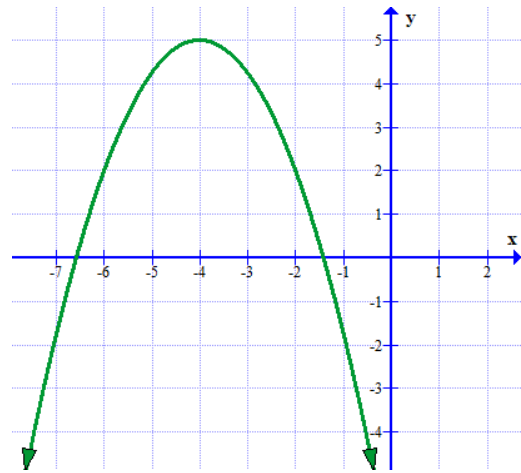
Part Three: Average Rate of Change

Find the average rate of change indicated for each function below.

10) Find the average rate of change over the interval $[0, 2]$.



11) Find the average rate of change over the interval $[-6, -2]$.



Part Four: Transformations of Quadratic Functions

Identify the transformations for each function below from the parent function $f(x) = x^2$.

12) $f(x) = -x^2 + 5$

13) $f(x) = 2(x + 4)^2$

14) $f(x) = -3(x - 6)^2 - 2$

15) $f(x) = (x + 1)^2$

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

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

Part Five: Vertex, Axis of Symmetry, and Extrema

For the following functions, identify the vertex, axis of symmetry and extrema.

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

19) $f(x) = -2x^2 + 12x$

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

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

Part Six: Converting Between Different Forms of Quadratics

Convert the following quadratic functions from vertex form to standard form.

22) $f(x) = -0.5(x + 4)^2 - 2$

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

Convert the following quadratic functions from standard form to vertex form.

24) $f(x) = 2x^2 + 8x - 6$

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

Part Seven: Applications of Quadratic Functions

Solve the following word problems.

26) A person standing at the edge of a building throws a baseball vertically upward. The quadratic function $f(x) = -16x^2 + 64x + 32$ models the baseball's height above the ground, $f(x)$ in meters, x seconds after it was thrown.

a) From what height was the baseball thrown?

b) When did the baseball hit its maximum height?

c) What was the baseball's maximum height?

d) A bird is flying 100 feet above the ground – is the bird in danger of being hit?

e) When did the baseball land?

Jennifer hit a golf ball from the ground and it followed the projectile $h(t) = -16t^2 + 100t$, where t is the time in seconds, and h is the height of the ball.

a) When did the ball hit its maximum height?

b) What was the maximum height?

c) When did the golfball land?