

Section 3.2 Extra Practice

1. Which functions are quadratic?

Explain why.

a) $y = x^2 - 15x$

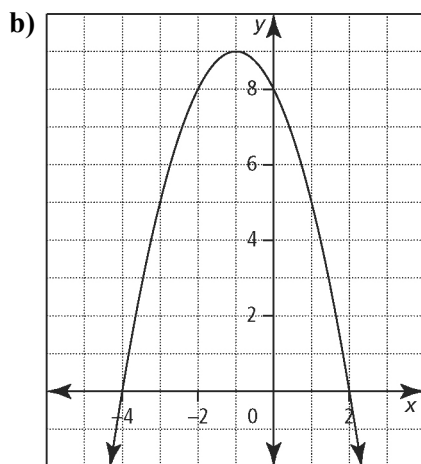
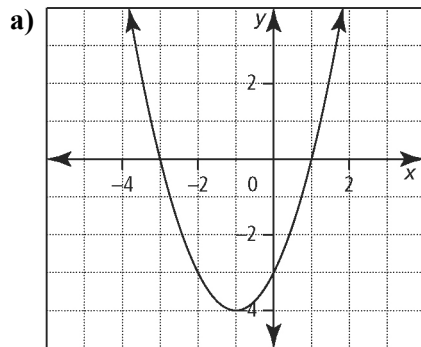
b) $f(x) = (x + 4)(x - 4)$

c) $h(t) = -4.9t^2 + 400$

d) $V(w) = w(w + 3)(w - 1)$

2. For each graph, identify the following:

- the coordinates of the vertex
- the equation of the axis of symmetry
- the x -intercepts and y -intercept
- the direction of opening
- the maximum or minimum value
- the domain and range



3. Write each quadratic function in standard form, $y = ax^2 + bx + c$.

a) $y = (x + 7)^2 - 10$

b) $f(x) = (2x + 5)(6 - 3x)$

c) $h(t) = -9(t + 1)^2 + 50$

d) $y = (4x + 3)(2x + 5)$

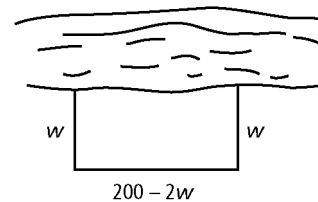
4. Sketch the graph of each function. For each graph, determine

- the coordinates of the vertex
- the equation of the axis of symmetry
- the x -intercepts and y -intercept
- the direction of opening
- the maximum or minimum value
- the domain and range

a) $y = x^2 - 8x + 15$ b) $f(x) = -(x + 1)(x + 7)$

c) $y = x^2 - 4x$ d) $h(t) = 10t - 5t^2$

5. A farmer has 200 m of fencing material to enclose a rectangular field adjacent to a river. No fencing is required along the river.



- What does w represent in the diagram? Why is the length equal to $200 - 2w$?
- Write a function that can be used to represent the area of the field.
- Sketch the graph of the function.
- Determine the maximum area of the field.
- Determine the dimensions of the region that give the maximum area.

6. A projectile is fired out of a cannon at 105 m/s from a 100-m cliff. The function that models the height, h , of the trajectory in relation to time, t , is $h(t) = -5t^2 + 105t + 100$.
- Sketch the graph of the function.
 - Determine the h -intercept of the function. What does the h -intercept represent?
 - Determine the t -intercept of the function. What does the t -intercept represent?
 - Determine the maximum height of the projectile and when it occurs.

