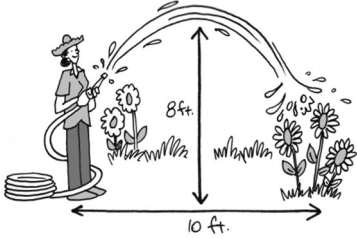


**Practice 2.2.1****Remember to show your work!**

2-30. Maura is deciding which hose to use to water her outdoor plants. Maura notices that the water coming out of her garden hoses follows a parabolic path.



When Maura uses her green garden hose the greatest height the water reaches is 8 feet, and it lands on the plants 10 feet from where she is standing. Both the nozzle of the hose and the top of the flowers are 4 feet above the ground. Maura has already determined that when she has the water on full blast, the water from the red hose follows the path

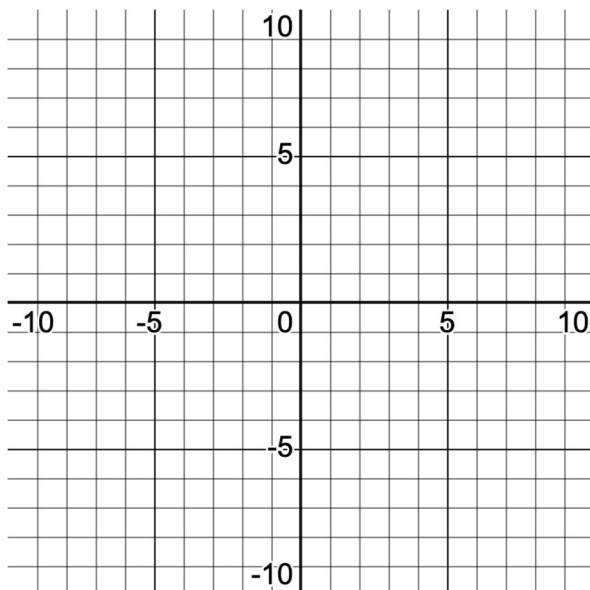
$$y = -(x-3)^2 + 7$$

- Which hose will throw the water higher?
- Write an equation that models the path of the water from Maura's green hose.
- What domain and range make sense for the water from Maura's green hose?

Domain: \_\_\_\_\_

Range: \_\_\_\_\_

2-31. Draw the graph of  $y = 2x^2 + 3x + 1$ .



- What are the x and y intercepts?

- Where is the line of symmetry of this parabola? Write its equation.

- What are the coordinates of the vertex?

2-33. Simplify each expression. Refer to the Math Notes for this section for help.

a.  $\sqrt{50}$

b.  $\sqrt{72}$

c.  $\sqrt{45}$

2-34. Below are two situations that can be described using exponential functions. They represent a small sample of the situations where quantities grow or decay by a constant percentage over equal periods of time.

For each situation:

- What is an appropriate unit of time (such as days, weeks, years)?
  - What is the multiplier?
  - What is the initial value?
  - Write an exponential equation in the form  $y = a(b)^x$  that represents the situation.
- a. The value of a car with an initial purchase price of \$12,250 depreciates by 11% per year.

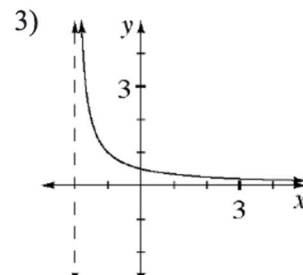
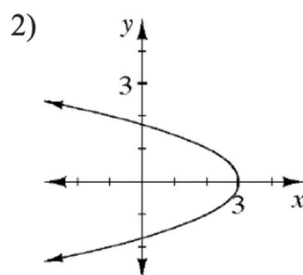
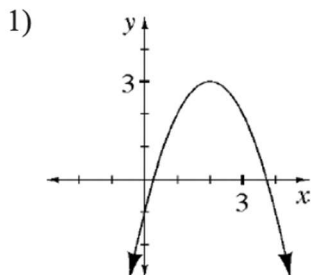
- b. An investment of \$1000 earns 6% annual interest, compounded monthly.

2-36. **Match** each graph below with its domain. Then state the range of each graph.

a. D: all real numbers

b. D:  $x > -2$

c. D:  $x \leq 3$



Domain: \_\_\_\_\_

Domain: \_\_\_\_\_

Domain: \_\_\_\_\_

Range: \_\_\_\_\_

Range: \_\_\_\_\_

Range: \_\_\_\_\_