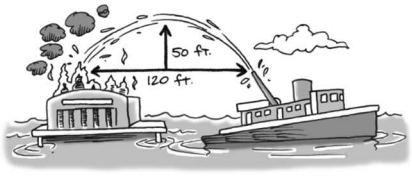
Name _____
Period _____ Date _____

Practice 2.1.2

Remember to show your work!

2-18. A fireboat in the harbor is helping put out a fire in a warehouse on the pier. The distance from the barrel (end) of the water cannon to the roof of the warehouse is 120 feet, and the water shoots up 50 feet above the barrel of the water cannon.



Sketch a graph and write an equation of the parabola that models the path of the water from the fireboat to the fire. State an appropriate domain and range for this situation.

Domain: _____ Range: _____

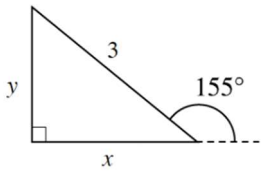
2-19. Below are two situations that can be described using exponential functions. They represent a small sample of the situations where quantities grow or decay by a constant percentage over equal periods of time. For each situation:

- What is an appropriate unit of time (such as days, weeks, years)?
- What is the multiplier that should be used?
- What is the initial value?
- Write the equation of an exponential function that represents the situation.

a. A house purchased for $120,000 has an annual appreciation of 6%

b. The number of bacteria present in a colony is 180 at noon, and it increases at a rate of 22% per hour.

2-20. A 3-foot indoor children's slide must meet the ground very gradually and make an angle of 155°, as shown in the diagram below. What are the height of the slide (y) and the length of the floor it will cover (x)?

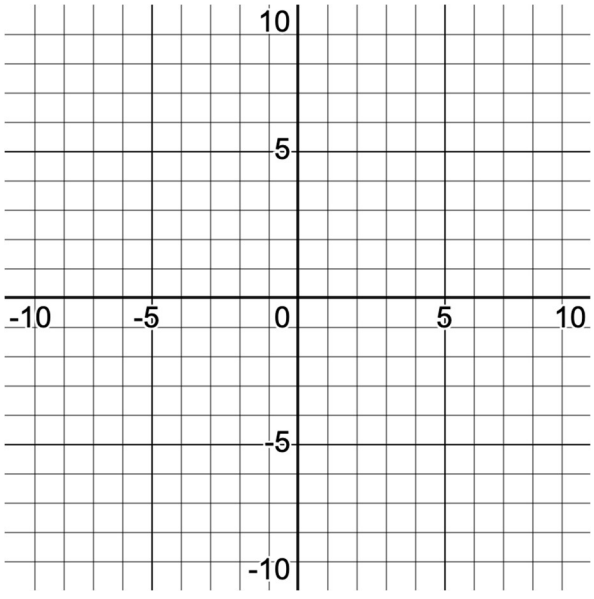


2-21. Solve each of the following equations.

a. $\frac{3}{x} + 6 = -45$	b. $\frac{x-2}{5} = \frac{10-x}{8}$	c. $(x+1)(x-3) = 0$

2-22. Make a table and a complete graph for □(x) = $x^3 - 4$. **Fully** describe the graph.

x	y



Description: