

Lesson 5 Practice Problems

1. Rewrite each equation so that the expression on one side could be graphed and the x -intercepts of the graph would show the solutions to the equation.

a. $3x^2 = 81$

b. $(x - 1)(x + 1) - 9 = 5x$

c. $x^2 - 9x + 10 = 32$

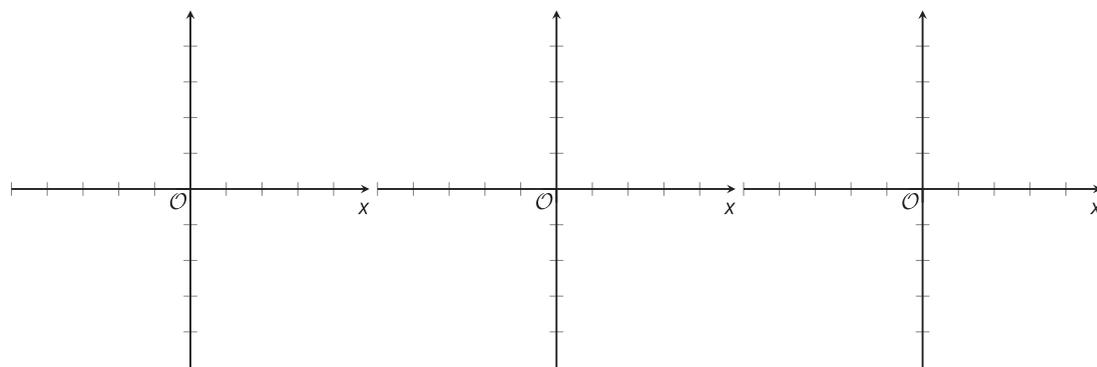
d. $6x(x - 8) = 29$

2. a. Here are equations that define quadratic functions f , g , and h . Sketch a graph, by hand or using technology, that represents each equation.

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

$$g(x) = x(x + 3)$$

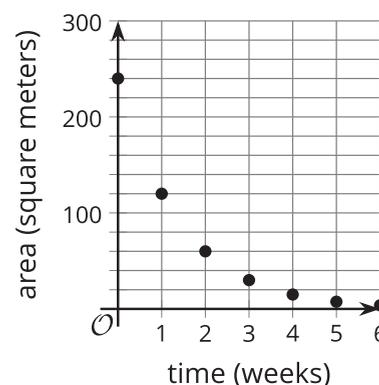
$$h(x) = (x - 1)^2$$



- b. Determine how many solutions each $f(x) = 0$, $g(x) = 0$, and $h(x) = 0$ has. Explain how you know.

3. Mai is solving the equation $(x - 5)^2 = 0$. She writes that the solutions are $x = 5$ and $x = -5$. Han looks at her work and disagrees. He says that only $x = 5$ is a solution. Who do you agree with? Explain your reasoning.

4. The graph shows the number of square meters, A , covered by algae in a lake w weeks after it was first measured.



In a second lake, the number of square meters, B , covered by algae is defined by the equation $B = 975 \cdot \left(\frac{2}{5}\right)^w$, where w is the number of weeks since it was first measured.

For which algae population is the area decreasing more rapidly? Explain how you know.

(From Unit 5, Lesson 6.)

5. If the equation $(x - 4)(x + 6) = 0$ is true, which is also true according to the zero product property?
- A. only $x - 4 = 0$
 - B. only $x + 6 = 0$
 - C. $x - 4 = 0$ or $x + 6 = 0$
 - D. $x = -4$ or $x = 6$

(From Unit 7, Lesson 4.)

6. a. Solve the equation $25 = 4z^2$.
- b. Show that your solution or solutions are correct.

(From Unit 7, Lesson 3.)

7. To solve the quadratic equation $3(x - 4)^2 = 27$, Andre and Clare wrote the following:

Andre

$$\begin{aligned} 3(x - 4)^2 &= 27 \\ (x - 4)^2 &= 9 \\ x^2 - 4^2 &= 9 \\ x^2 - 16 &= 9 \\ x^2 &= 25 \\ x &= 5 \quad \text{or} \quad x = -5 \end{aligned}$$

Clare

$$\begin{aligned} 3(x - 4)^2 &= 27 \\ (x - 4)^2 &= 9 \\ x - 4 &= 3 \\ x &= 7 \end{aligned}$$

a. Identify the mistake each student made.

b. Solve the equation and show your reasoning.

(From Unit 7, Lesson 3.)

8. Decide if each equation has 0, 1, or 2 solutions and explain how you know.

a. $x^2 - 144 = 0$

b. $x^2 + 144 = 0$

c. $x(x - 5) = 0$

d. $(x - 8)^2 = 0$

e. $(x + 3)(x + 7) = 0$