

Lesson 15 Practice Problems

1. Select **all** of the quadratic expressions in vertex form.

A. $(x - 2)^2 + 1$

B. $x^2 - 4$

C. $x(x + 1)$

D. $(x + 3)^2$

E. $(x - 4)^2 + 6$

2. Here are two equations. One defines function m and the other defines function p .

$$m(x) = x(x + 6)$$

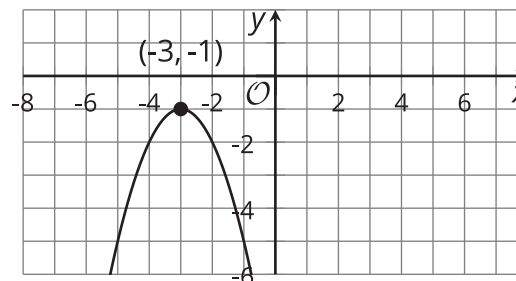
$$p(x) = (x + 3)^2 - 9$$

a. Show that the expressions defining m and p are equivalent.

b. What is the vertex of the graph of m ? Explain how you know.

c. What are the x -intercepts of the graph of p ? Explain how you know.

3. Which equation is represented by the graph?



- A. $y = (x - 1)^2 + 3$
- B. $y = (x - 3)^2 + 1$
- C. $y = -(x + 3)^2 - 1$
- D. $y = -(x - 3)^2 + 1$

4. For each equation, write the coordinates of the vertex of the graph that represents the equation.

- a. $y = (x - 3)^2 + 5$
- b. $y = (x + 7)^2 + 3$
- c. $y = (x - 4)^2$
- d. $y = x^2 - 1$
- e. $y = 2(x + 1)^2 - 5$
- f. $y = -2(x + 1)^2 - 5$

5. For each function, write the coordinates of the vertex of its graph and tell whether the graph opens up or down.

function	coordinates of vertex	graph opens up or down?
$f(x) = (x - 4)^2 - 5$		
$g(x) = -x^2 + 5$		
$h(x) = 2(x + 1)^2 - 4$		

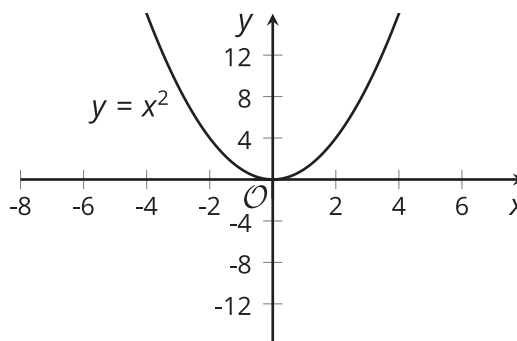
6. Here is a graph that represents $y = x^2$.

a. Describe what would happen to the graph if the original equation were modified as follows:

i. $y = -x^2$

ii. $y = 3x^2$

iii. $y = x^2 + 6$



b. Sketch the graph of the equation $y = -3x^2 + 6$ on the same coordinate plane as $y = x^2$.

(From Unit 6, Lesson 12.)

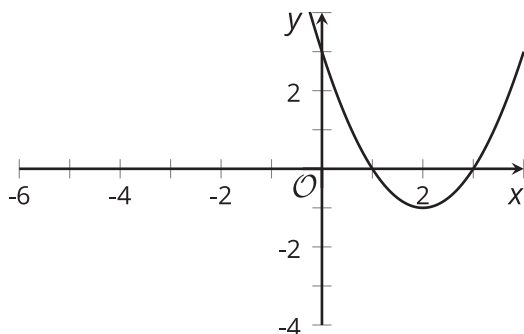
7. Noah is going to put \$2,000 in a savings account. He plans on putting the money in an account and leaving it there for 5 years. He can put the money in an account that pays 1% interest monthly, an account that pays 6% interest every six months, or an account that pays 12% interest annually.

Which account will give him the most money in his account at the end of the 5 years?

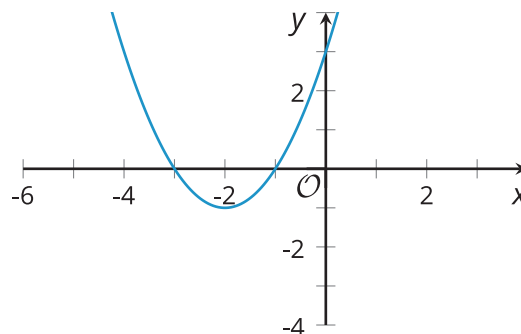
(From Unit 5, Lesson 16.)

8. Here are four graphs. Match each graph with a quadratic equation that it represents.

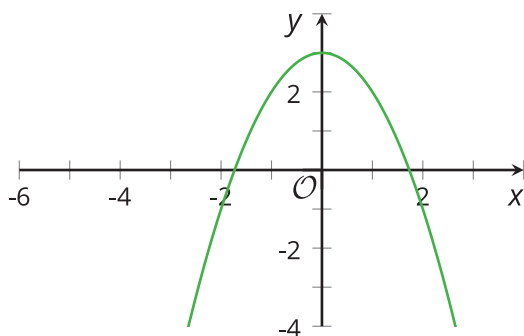
Graph A



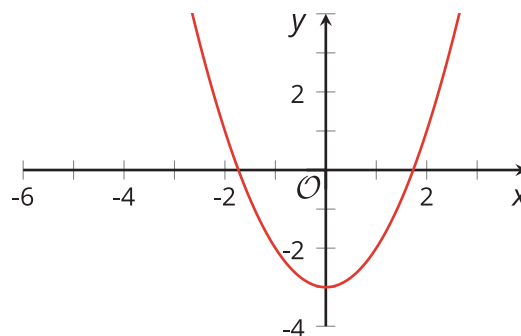
Graph B



Graph C



Graph D



A. Graph A

B. Graph B

C. Graph C

D. Graph D

1. $y = -x^2 + 3$

2. $y = (x + 1)(x + 3)$

3. $y = x^2 - 3$

4. $y = (x - 1)(x - 3)$

(From Unit 6, Lesson 12.)

9. The table shows some input and output values of function f . Describe a possible rule for the function by using words or by writing an equation.

x	$f(x)$
-3	-8
0	-2
4	6
10	18

(From Unit 4, Lesson 5.)