Lesson 21 Practice Problems

1. Match each expression to an equivalent expression.

A. $\sqrt{5} \pm \sqrt{3}$	1. 3 and 7
B. $1 \pm \sqrt{3}$	2. $\sqrt{5} + \sqrt{3}$ and $\sqrt{5} - \sqrt{3}$
C. $\sqrt{3} \pm 1$	3. -6 and 0
D. 5 ± -2	4. $\sqrt{3} + 1$ and $\sqrt{3} - 1$
E. -3 ± -3	5. $1 + \sqrt{3}$ and $1 - \sqrt{3}$

(From Unit 7, Lesson 15.)

2. Consider the statement: "An irrational number multiplied by an irrational number always makes an irrational product."

   Select **all** the examples that show that this statement is false.

   A. $\sqrt{4} \cdot \sqrt{5}$

   B. $\sqrt{4} \cdot \sqrt{4}$

   C. $\sqrt{7} \cdot \sqrt{7}$

   D. $\frac{1}{\sqrt{5}} \cdot \sqrt{5}$

   E. $\sqrt{0} \cdot \sqrt{7}$

   F. $-\sqrt{5} \cdot \sqrt{5}$

   G. $\sqrt{5} \cdot \sqrt{7}$

3. a. Where is the vertex of the graph that represents $y = (x - 3)^2 + 5$?

   b. Does the graph open up or down? Explain how you know.

(From Unit 6, Lesson 15.)

4. Here are the solutions to some quadratic equations. Decide if the solutions are rational or irrational.

$3 \pm \sqrt{2}$ $\sqrt{9} \pm 1$ $\frac{1}{2} \pm \frac{3}{2}$ 10 ± 0.3

$\frac{1 \pm \sqrt{8}}{2}$ $-7 \pm \sqrt{\frac{4}{9}}$

5. Find an example that shows that the statement is false.

   a. An irrational number multiplied by an irrational number always makes an irrational product.

   b. A rational number multiplied by an irrational number never gives a rational product.

   c. Adding an irrational number to an irrational number always gives an irrational sum.

6. Which equation is equivalent to $x^2 - 3x = \frac{7}{4}$ but has a perfect square on one side?

   A. $x^2 - 3x + 3 = \frac{19}{4}$

   B. $x^2 - 3x + \frac{3}{4} = \frac{10}{4}$

   C. $x^2 - 3x + \frac{9}{4} = \frac{16}{4}$

   D. $x^2 - 3x + \frac{9}{4} = \frac{7}{4}$

(From Unit 7, Lesson 13.)

7. A student who used the quadratic formula to solve $2x^2 - 8x = 2$ said that the solutions are $x = 2 + \sqrt{5}$ and $x = 2 - \sqrt{5}$.

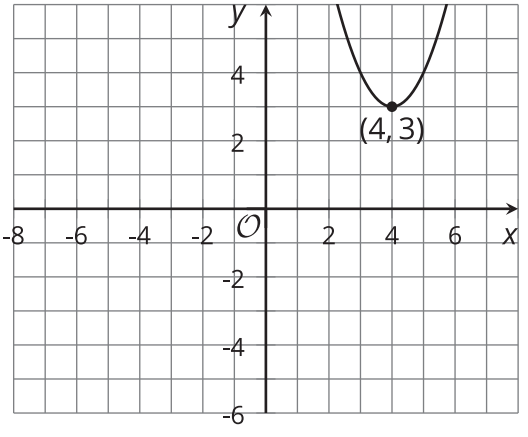
   a. What equations can we graph to check those solutions? What features of the graph do we analyze?

b. How do we look for $2 + \sqrt{5}$ and $2 - \sqrt{5}$ on a graph?

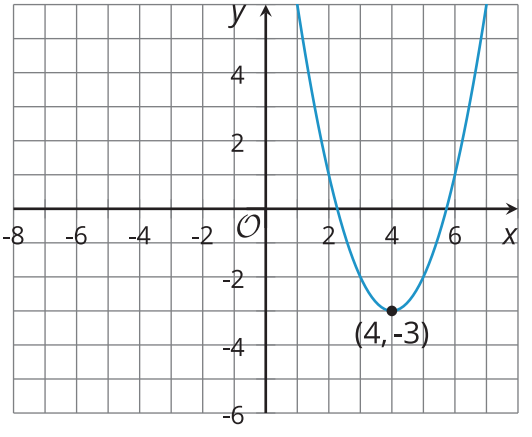
(From Unit 7, Lesson 18.)

8. Here are 4 graphs. Match each graph with a quadratic equation that it represents.

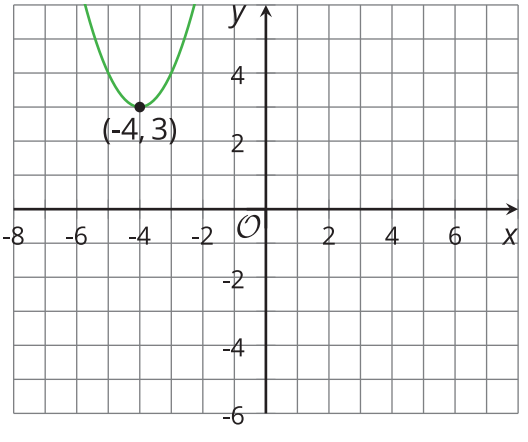
Graph A



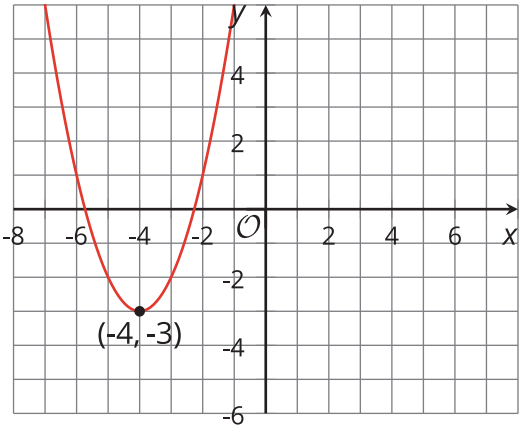
Graph B



Graph C



Graph D



A. Graph A

B. Graph B

C. Graph C

D. Graph D

1. $y = (x + 4)^2 - 3$

2. $y = (x - 4)^2 - 3$

3. $y = (x + 4)^2 + 3$

4. $y = (x - 4)^2 + 3$

(From Unit 6, Lesson 15.)