

Lesson 15 Practice Problems

1. Solve each equation and write the solutions using \pm notation.

a. $x^2 = 144$

b. $x^2 = 5$

c. $4x^2 = 28$

d. $x^2 = \frac{25}{4}$

e. $2x^2 = 22$

f. $7x^2 = 16$

2. Match each expression to an equivalent expression.

A. 4 ± 1

1. -17 and 5

B. $10 \pm \sqrt{4}$

2. $4 + \sqrt{2}$ and $4 - \sqrt{2}$

C. -6 ± 11

3. 8 and 12

D. $4 \pm \sqrt{10}$

4. 3 and 5

E. $\sqrt{16} \pm \sqrt{2}$

5. $4 + \sqrt{10}$ and $4 - \sqrt{10}$

3. a. Is $\sqrt{4}$ a positive or negative number? Explain your reasoning.

b. Is $\sqrt{5}$ a positive or negative number? Explain your reasoning.

c. Explain the difference between $\sqrt{9}$ and the solutions to $x^2 = 9$.

4. *Technology required.* For each equation, find the exact solutions by completing the square and the approximate solutions by graphing. Then, verify that the solutions found using the two methods are close.

$$x^2 + 10x + 8 = 0$$

$$x^2 - 4x - 11 = 0$$

5. Jada is working on solving a quadratic equation, as shown here.

$$\begin{aligned} p^2 - 5p &= 0 \\ p(p - 5) &= 0 \\ p - 5 &= 0 \\ p &= 5 \end{aligned}$$

She thinks that her solution is correct because substituting 5 for p in the original expression $p^2 - 5p$ gives $5^2 - 5(5)$, which is $25 - 25$ or 0.

Explain the mistake that Jada made and show the correct solutions.

(From Unit 7, Lesson 9.)

6. Which expression in factored form is equivalent to $30x^2 + 31x + 5$?
- A. $(6x + 5)(5x + 1)$
 - B. $(5x + 5)(6x + 1)$
 - C. $(10x + 5)(3x + 1)$
 - D. $(30x + 5)(x + 1)$

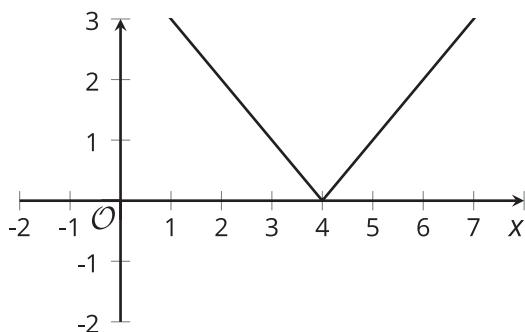
(From Unit 7, Lesson 10.)

7. Two rocks are launched straight up in the air. The height of Rock A is given by the function f , where $f(t) = 4 + 30t - 16t^2$. The height of Rock B is given by g , where $g(t) = 5 + 20t - 16t^2$. In both functions, t is time measured in seconds and height is measured in feet.

- Which rock is launched from a higher point?
- Which rock is launched with a greater velocity?

(From Unit 6, Lesson 6.)

8. a. Describe how the graph of $f(x) = |x|$ has to be shifted to match the given graph.



- b. Find an equation for the function represented by the graph.

(From Unit 4, Lesson 14.)