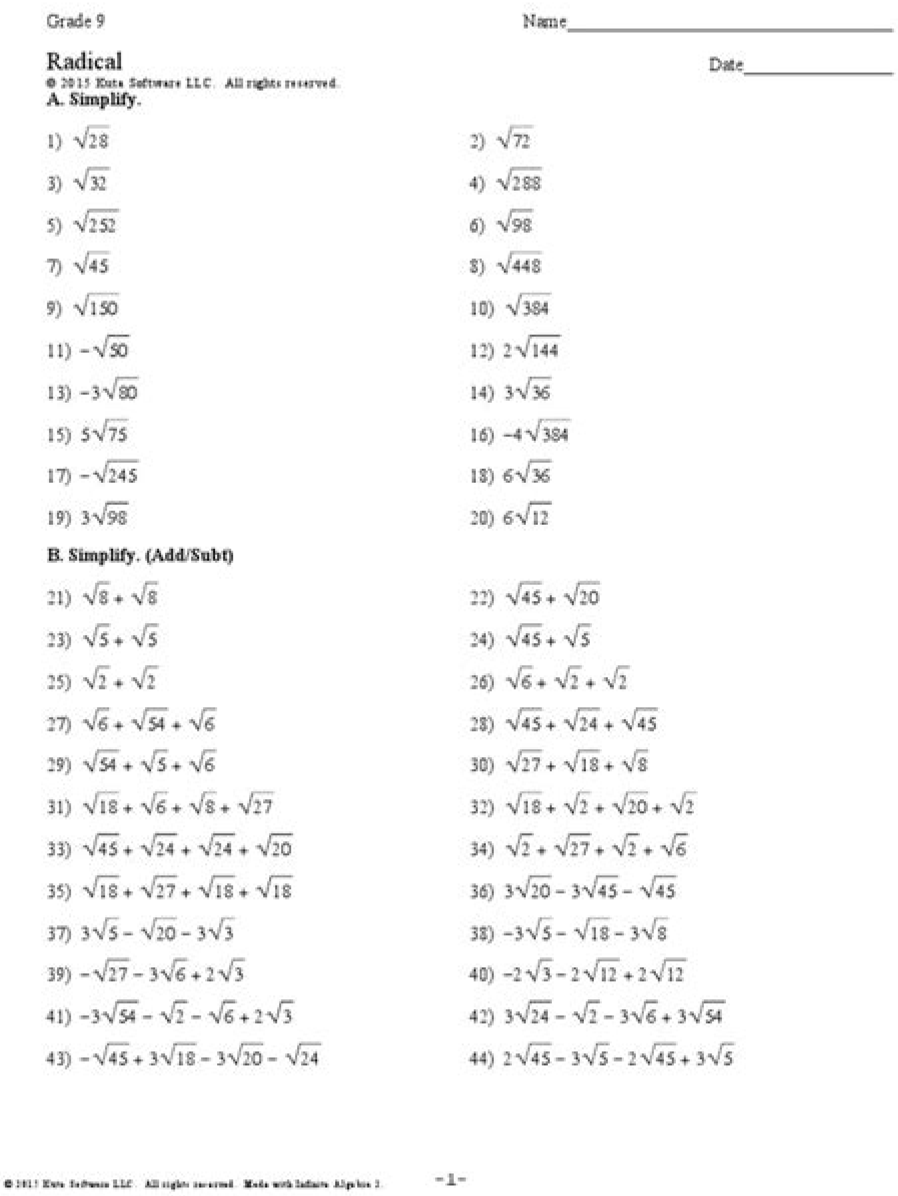
# Lesson 8 7 Practice B Radical Functions Answers



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**A. Simplify.**

1) $\sqrt{28}$

2) $\sqrt{72}$

3) $\sqrt{32}$

4) $\sqrt{288}$

5) $\sqrt{252}$

6) $\sqrt{98}$

7) $\sqrt{45}$

8) $\sqrt{448}$

9) $\sqrt{150}$

10) $\sqrt{384}$

11) $-\sqrt{50}$

12) $2\sqrt{144}$

13) $-3\sqrt{80}$

14) $3\sqrt{36}$

15) $5\sqrt{75}$

16) $-4\sqrt{384}$

17) $-\sqrt{245}$

18) $6\sqrt{36}$

19) $3\sqrt{98}$

20) $6\sqrt{12}$

**B. Simplify. (Add/Subt)**

21) $\sqrt{8} + \sqrt{8}$

22) $\sqrt{45} + \sqrt{20}$

23) $\sqrt{5} + \sqrt{5}$

24) $\sqrt{45} + \sqrt{5}$

25) $\sqrt{2} + \sqrt{2}$

26) $\sqrt{6} + \sqrt{2} + \sqrt{2}$

27) $\sqrt{6} + \sqrt{54} + \sqrt{6}$

28) $\sqrt{45} + \sqrt{24} + \sqrt{45}$

29) $\sqrt{54} + \sqrt{5} + \sqrt{6}$

30) $\sqrt{27} + \sqrt{18} + \sqrt{8}$

31) $\sqrt{18} + \sqrt{6} + \sqrt{8} + \sqrt{27}$

32) $\sqrt{18} + \sqrt{2} + \sqrt{20} + \sqrt{2}$

33) $\sqrt{45} + \sqrt{24} + \sqrt{24} + \sqrt{20}$

34) $\sqrt{2} + \sqrt{27} + \sqrt{2} + \sqrt{6}$

35) $\sqrt{18} + \sqrt{27} + \sqrt{18} + \sqrt{18}$

36) $3\sqrt{20} - 3\sqrt{45} - \sqrt{45}$

37) $3\sqrt{5} - \sqrt{20} - 3\sqrt{3}$

38) $-3\sqrt{5} - \sqrt{18} - 3\sqrt{8}$

39) $-\sqrt{27} - 3\sqrt{6} + 2\sqrt{3}$

40) $-2\sqrt{3} - 2\sqrt{12} + 2\sqrt{12}$

41) $-3\sqrt{54} - \sqrt{2} - \sqrt{6} + 2\sqrt{3}$

42) $3\sqrt{24} - \sqrt{2} - 3\sqrt{6} + 3\sqrt{54}$

43) $-\sqrt{45} + 3\sqrt{18} - 3\sqrt{20} - \sqrt{24}$

44) $2\sqrt{45} - 3\sqrt{5} - 2\sqrt{45} + 3\sqrt{5}$

 

Lesson 8-7 Practice B Radical Functions Answers is an essential component of understanding radical functions in algebra. Radical functions are those that involve roots, such as square roots, cube roots, and higher-order roots. They play a crucial role in various mathematical concepts and real-world applications. In this article, we will explore the key concepts surrounding radical functions, how to solve problems related to them, and the answers to practice problems commonly found in Lesson 8-7.

## Understanding Radical Functions

Radical functions can be defined as functions that contain a variable within a radical (root) symbol.

The most commonly encountered radical function is the square root function, but cube roots and higher-order roots also exist.

## Definition and Notation

A radical function can be expressed in the general form:

$$ f(x) = \sqrt[n]{g(x)} $$

where:
- $f(x)$ is the function,
- $g(x)$ is a polynomial or a constant, and
- $n$ is the degree of the root.

For example:
- The function $f(x) = \sqrt{x}$ is a radical function with $n = 2$.
- The function $f(x) = \sqrt[3]{x + 1}$ involves a cube root.

## Domain and Range of Radical Functions

Understanding the domain and range of radical functions is crucial for graphing and solving equations involving these functions.

- Domain: The domain of a radical function is determined by the values of $x$ for which the function is defined. For example:
- For $f(x) = \sqrt{x}$, the domain is $x \geq 0$ because a square root of a negative number is not defined in the real number system.
- For $f(x) = \sqrt[3]{x}$, the domain is all real numbers because the cube root is defined for all values.

- Range: The range of a radical function is the set of output values that the function can produce. For example:
- For $f(x) = \sqrt{x}$, the range is $y \geq 0$.
- For $f(x) = \sqrt[3]{x}$, the range is all real numbers.

## Graphing Radical Functions

Graphing is an essential skill for understanding radical functions. Here are some key points to consider when graphing:

1. Identify the parent function: The parent function for square roots is $f(x) = \sqrt{x}$, and for cube roots, it is $f(x) = \sqrt[3]{x}$.

2. Transformation: Understand how transformations affect the graph:
- Vertical shifts: $f(x) = \sqrt{x} + k$ shifts the graph vertically by $k$ units.

- Horizontal shifts: $f(x) = \sqrt{x - h}$ shifts the graph horizontally by $h$ units.

3. Plot key points: Use key points from the parent function to help sketch the graph. For $f(x) = \sqrt{x}$, key points include (0, 0), (1, 1), (4, 2), and (9, 3).

4. Asymptotic behavior: Understand that radical functions have specific behaviors as $x$ approaches certain values. For example, as $x$ approaches $0$ from the right, $f(x) = \sqrt{x}$ approaches $0$.

# Solving Radical Equations

Solving equations that involve radical functions requires specific techniques, including isolating the radical and squaring both sides.

## Steps to Solve Radical Equations

1. Isolate the radical: If the equation is in the form $\sqrt{g(x)} = k$, isolate the radical on one side of the equation.

2. Square both sides: Square both sides of the equation to eliminate the radical. Be cautious, as this may introduce extraneous solutions.

3. Solve the resulting equation: You will usually end up with a polynomial equation that can be solved using standard algebraic techniques.

4. Check for extraneous solutions: Substitute your solutions back into the original equation to verify they are valid.

## Example Problems from Lesson 8-7 Practice B

Let’s take a look at some example problems related to radical functions that you might find in Lesson 8-7 Practice B:

1. Example 1: Solve $\sqrt{x + 4} = 6$.
- Isolate the radical: Already isolated.
- Square both sides: $x + 4 = 36$.
- Solve: $x = 32$.
- Check: $\sqrt{32 + 4} = \sqrt{36} = 6$. Valid solution.

2. Example 2: Solve $\sqrt{2x - 3} + 1 = 5$.
- Isolate the radical: $\sqrt{2x - 3} = 4$.
- Square both sides: $2x - 3 = 16$.
- Solve: $2x = 19$, $x = 9.5$.
- Check: $\sqrt{2(9.5) - 3} + 1 = 5$. Valid solution.

3. Example 3: Solve $\sqrt{x^2 + 2x} = x + 1$.
- Isolate the radical: Already isolated.
- Square both sides: $x^2 + 2x = x^2 + 2x + 1$.
- Rearrange: $0 = 1$. No solutions (extraneous).

# Practice Problems and Answers

Here are some practice problems related to radical functions, along with their answers:

1. Solve $\sqrt{x + 1} = 3$.
- Answer: $x = 8$.

2. Solve $\sqrt{4x - 5} = x - 1$.
- Answer: $x = 4$.

3. Solve $\sqrt{x + 9} + 2 = 5$.
- Answer: $x = 16$.

4. Solve $\sqrt{x - 3} = x - 5$.
- Answer: $x = 4$.

5. Solve $\sqrt{2x + 1} = x + 3$.
- Answer: $x = 5$.

# Conclusion

In conclusion, understanding Lesson 8-7 Practice B Radical Functions Answers is fundamental for mastering radical functions. This article covered the definition, domain, and range of radical functions, how to graph them, and techniques for solving radical equations. Additionally, practice problems with their solutions were provided, aiding in the comprehension of this important algebraic concept. Mastery of radical functions will not only enhance your mathematical skills but also prepare you for more complex topics in algebra and calculus. As you practice, always remember to check your solutions to ensure accuracy.

# Frequently Asked Questions

## What are radical functions and how are they typically represented?

Radical functions are functions that involve a variable within a radical, usually a square root. They are typically represented in the form $f(x) = \sqrt{g(x)}$, where $g(x)$ is a polynomial function.

## How can I find the domain of a radical function like those in lesson 8.7?

To find the domain of a radical function, set the expression inside the radical greater than or equal to zero and solve for x. This will give you the values of x for which the function is defined.

## What are some common mistakes when solving problems related to radical functions?

Common mistakes include forgetting to consider the restrictions on the domain, misapplying the properties of radicals, and failing to check for extraneous solutions after squaring both sides of an equation.

## Can you explain how to simplify radical expressions as seen in practice problems from lesson 8.7?

To simplify radical expressions, look for perfect squares (or cubes, etc.) within the radical, factor them out, and reduce the expression. For example, √(4x^2) simplifies to 2x.

## What strategies can help in solving practice problems related to radical functions?

Strategies include sketching the function to understand its behavior, using substitution to simplify complex expressions, and systematically applying algebraic properties of radicals to isolate the variable.

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