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# Radical Functions Review Worksheet Answer Key PDF

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## Part 1: Building a Foundation

**What is the general form of a radical function?**

undefined.  A) f(x) = ax + b

**undefined.  B) f(x) = n√(x)** ✓

undefined.  C) f(x) = ax^2 + bx + c

undefined.  D) f(x) = log(x)

The general form of a radical function involves a root of a variable.

**Which of the following are properties of radical functions? (Select all that apply)**

**undefined.  A) They involve roots such as square roots or cube roots.** ✓

undefined. B) They can have negative numbers under even roots.

**undefined.  C) The domain for even roots is restricted to non-negative numbers.** ✓

undefined. D) They are always linear functions.

Radical functions have specific properties related to their roots and domains.

**Explain why the domain of a square root function is restricted to non-negative numbers.**

**The domain is restricted because square roots of negative numbers are not real.**

**List two techniques used to simplify radical expressions.**

1. Technique 1

**Rationalizing the denominator**

2. Technique 2

**Factoring out perfect squares**

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Common techniques include rationalizing the denominator and factoring out perfect squares.

## Part 2: Comprehension and Application

**Which of the following correctly describes the range of the function f(x) = √x?**

undefined. A) All real numbers

**undefined. B) Non-negative real numbers ✓**

undefined. C) Negative real numbers

undefined. D) Positive integers

The range of f(x) = √x includes all non-negative real numbers.

**Which steps are involved in solving a radical equation? (Select all that apply)**

**undefined. A) Isolate the radical on one side of the equation. ✓**

undefined. B) Add the same number to both sides.

**undefined. C) Raise both sides to the power of the root. ✓**

**undefined. D) Solve the resulting polynomial equation. ✓**

Key steps include isolating the radical and raising both sides to the power of the root.

**Describe how the graph of a cube root function differs from that of a square root function.**

**The cube root function has a different shape and is defined for all real numbers, while the square root function is only defined for non-negative numbers.**

**If f(x) = √(x - 4), what is the domain of f(x)?**

undefined. A) x ≥ 0

undefined. B) x > 4

**undefined. C) x ≥ 4 ✓**

undefined. D) x > 0

The domain is restricted to values where the expression under the square root is non-negative.

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**Which transformations occur when the function f(x) = √x is changed to g(x) = 2√(x - 3) + 1? (Select all that apply)**

**undefined. A) Vertical stretch by a factor of 2 ✓**

**undefined. B) Horizontal shift to the right by 3 units ✓**

**undefined. C) Vertical shift up by 1 unit ✓**

undefined. D) Reflection over the x-axis

The transformations include a vertical stretch, a horizontal shift, and a vertical shift.

**Solve the equation √(x + 5) = 3 and verify your solution.**

**To solve, square both sides and then isolate x. Verify by substituting back into the original equation.**

## Part 3: Analysis, Evaluation, and Creation

**What is the effect of adding a constant inside the radical, as in f(x) = √(x + c), on the graph of the function?**

undefined. A) Shifts the graph vertically

**undefined. B) Shifts the graph horizontally ✓**

undefined. C) Reflects the graph over the x-axis

undefined. D) Reflects the graph over the y-axis

Adding a constant inside the radical shifts the graph horizontally.

**Analyze the function f(x) = √x + 2. Which of the following statements are true? (Select all that apply)**

**undefined. A) The graph is shifted up by 2 units. ✓**

**undefined. B) The domain is x ≥ 0. ✓**

**undefined. C) The range is y ≥ 2. ✓**

undefined. D) The graph is reflected over the x-axis.

The function is shifted up by 2 units, and its domain and range are affected.

**Compare and contrast the graphs of f(x) = √x and g(x) = √(x - 2) + 3.**

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**The graph of g(x) is shifted right and up compared to f(x).**

**Which of the following real-world scenarios can be modeled by a radical function?**

undefined. A) Calculating the area of a square given its side length

**undefined. B) Determining the time it takes for an object to fall a certain distance ✓**

undefined. C) Calculating the volume of a cube given its side length

undefined. D) Determining the interest earned on a savings account

Real-world scenarios involving area or distance can often be modeled by radical functions.

**When designing a roller coaster, which of the following aspects could be represented by a radical function? (Select all that apply)**

**undefined. A) The height of the coaster at different points ✓**

**undefined. B) The speed of the coaster as it descends ✓**

**undefined. C) The curvature of the track ✓**

undefined. D) The total length of the track

Aspects like height and speed can be modeled using radical functions.

**Create a real-world problem that involves a radical function and explain how you would solve it.**

**An example could involve calculating the height of a tree based on its shadow length.**

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