Radical Functions Review Worksheet

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Part 1: Building a Foundation

What is the general form of a radical function?

Hint: Think about the definition of radical functions.

- ◯ A) f(x) = ax + b
- ◯ B) f(x) = n√(x)
- ◯ C) f(x) = ax^2 + bx + c
- ◯ D) f(x) = log(x)

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

Hint: Consider the characteristics of radical functions.

- ☐ A) They involve roots such as square roots or cube roots.
- ☐ B) They can have negative numbers under even roots.
- ☐ C) The domain for even roots is restricted to non-negative numbers.
- ☐ D) They are always linear functions.

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

Hint: Think about the values that can be squared to yield a non-negative result.

List two techniques used to simplify radical expressions.

Hint: Consider methods that involve manipulating the radicals.

1. Technique 1

2. Technique 2

Part 2: Comprehension and Application

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

Hint: Consider the output values of the square root function.

- ◯ A) All real numbers
- ◯ B) Non-negative real numbers
- ◯ C) Negative real numbers
- ◯ D) Positive integers

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

Hint: Think about the process of isolating and eliminating the radical.

- ☐ A) Isolate the radical on one side of the equation.
- ☐ B) Add the same number to both sides.
- ☐ C) Raise both sides to the power of the root.
- ☐ D) Solve the resulting polynomial equation.

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

Hint: Consider the shape and symmetry of the graphs.

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

Hint: Consider the values of x that make the expression under the square root non-negative.

- ◯ A) $x \geq 0$
- ◯ B) $x > 4$
- ◯ C) $x \geq 4$
- ◯ D) $x > 0$

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

Hint: Think about how the function is altered in terms of stretching and shifting.

- ☐ A) Vertical stretch by a factor of 2
- ☐ B) Horizontal shift to the right by 3 units
- ☐ C) Vertical shift up by 1 unit
- ☐ D) Reflection over the x-axis

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

Hint: Isolate the radical and square both sides to solve.

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?

Hint: Consider how the graph shifts when a constant is added.

- ◯ A) Shifts the graph vertically
- ◯ B) Shifts the graph horizontally
- ◯ C) Reflects the graph over the x-axis

◯ D) Reflects the graph over the y-axis

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

Hint: Consider how the function is transformed and its characteristics.

☐ A) The graph is shifted up by 2 units.
☐ B) The domain is x ≥ 0.
☐ C) The range is y ≥ 2.
☐ D) The graph is reflected over the x-axis.

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

Hint: Think about the shifts and transformations applied to each function.

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

Hint: Consider situations where relationships involve square roots.

◯ A) Calculating the area of a square given its side length
◯ B) Determining the time it takes for an object to fall a certain distance
◯ C) Calculating the volume of a cube given its side length
◯ D) Determining the interest earned on a savings account

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

Hint: Think about the physical characteristics of roller coasters.

☐ A) The height of the coaster at different points
☐ B) The speed of the coaster as it descends
☐ C) The curvature of the track
☐ D) The total length of the track

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

Hint: Think about a scenario where a square root relationship is present.

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