Function Notation Worksheet Questions and Answers PDF

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Part 1: Building a Foundation

What does the notation f(x) represent in mathematics?

Hint: Think about what a function is in mathematics.

- ◯ A) A variable
- ◯ **B) A function ✓**
- ◯ C) A constant
- ◯ D) An equation

> The notation f(x) represents a function.

Which of the following are types of functions?

Hint: Consider the different forms functions can take.

- ☐ **A) Linear ✓**
- ☐ **B) Quadratic ✓**
- ☐ **C) Exponential ✓**
- ☐ **D) Polynomial ✓**

> Linear, quadratic, exponential, and polynomial are all types of functions.

Explain what is meant by the domain of a function.

Hint: Think about the possible input values for a function.

The domain of a function refers to the set of all possible input values (x-values) that the function can accept.

List two characteristics of a linear function.

Hint: Consider the graph and equation of linear functions.

1. Characteristic 1

Constant rate of change

2. Characteristic 2

Graph is a straight line

Linear functions have a constant rate of change and their graph is a straight line.

What is the range of the function f(x) = 2x + 3?

Hint: Think about the possible output values of the function.

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

The range of the function f(x) = 2x + 3 is all real numbers.

Part 2: Comprehension and Interpretation

If f(x) = 3x - 4, what is f(2)?

Hint: Substitute x with 2 in the function.

- ◯ **A) 2 ✓**
- ◯ B) 6
- ◯ C) 5
- ◯ D) 2

> f(2) = 3(2) - 4 = 2.

Which statements are true about the function f(x) = x^2?

Hint: Consider the properties of quadratic functions.

- ☐ **A) It is a quadratic function. ✓**
- ☐ **B) Its graph is a parabola. ✓**
- ☐ C) It has a constant rate of change.
- ☐ **D) Its domain is all real numbers. ✓**

> The function f(x) = x^2 is a quadratic function, its graph is a parabola, and its domain is all real numbers.

Describe how you would determine the inverse of a function.

Hint: Think about switching the roles of x and y.

> **To find the inverse of a function, you switch the x and y variables and solve for y.**

Part 3: Application and Analysis

Given f(x) = 2x + 1, what is the value of x if f(x) = 9?

Hint: Set the function equal to 9 and solve for x.

- ◯ A) 3
- ◯ **B) 4 ✓**
- ◯ C) 5
- ◯ D) 6

> If f(x) = 9, then 2x + 1 = 9, which gives x = 4.

For the function f(x) = x^2 - 4x + 4, which of the following are true?

Hint: Analyze the properties of the quadratic function.

- ☐ **A) It has a minimum value. ✓**
- ☐ B) It is a linear function.
- ☐ **C) The vertex is at (2,0). ✓**
- ☐ **D) It opens upwards. ✓**

> The function has a minimum value, the vertex is at (2,0), and it opens upwards.

Apply the concept of domain to determine the domain of the function f(x) = 1/(x-3).

Hint: Consider the values that make the denominator zero.

> **The domain of f(x) = 1/(x-3) is all real numbers except x = 3.**

Which of the following graphs represents a function with a domain of all real numbers and a range of y ≥ 0?

Hint: Think about the shape of the graph and its values.

- ◯ A) A line
- ◯ **B) A parabola opening upwards ✓**

- ◯ C) A circle
- ◯ D) A hyperbola

> A parabola opening upwards represents a function with a domain of all real numbers and a range of y ≥ 0.

Part 4: Evaluation and Creation

Evaluate the statements about the function f(x) = |x|.

Hint: Consider the properties of absolute value functions.

- ☐ **A) It is not differentiable at x = 0. ✓**
- ☐ **B) It is an even function. ✓**
- ☐ C) Its range is all real numbers.
- ☐ **D) It is continuous everywhere. ✓**

> The function f(x) = |x| is not differentiable at x = 0, it is an even function, and it is continuous everywhere.

Create a real-world scenario where a quadratic function could be used to model the situation. Describe the scenario and the function.

Hint: Think about situations involving area or projectile motion.

> **A real-world scenario could involve the path of a projectile, modeled by a quadratic function.**

Analyze the relationship between a function and its inverse. Provide an example to illustrate your explanation.

Hint: Consider how the input and output are related in both functions.

The inverse of a function reverses the input-output relationship, for example, if f(x) = 2x, then f^(-1)(x) = x/2.