What is a Function?

Worksheet

A function f is a relation between a set of inputs (the domain) and a set of outputs (the range) where every input maps to exactly one output, commonly written as y = f(x).

Questions

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

A) 10
B) 12
C) 14
D) 9

2. Which relation is NOT a function?

A) {(1,2),(2,4),(3,6)}
B) {(1,1),(2,1),(3,1)}
C) {(1,2),(1,3),(2,4)}
D) {(0,0),(1,1),(2,2)}

3. What test determines if a graph represents a function?

A) Horizontal Line Test
B) Vertical Line Test
C) Slope Test
D) Origin Test

4. For f(x) = x, what is the range?

A) All real numbers
B) x 0
C) y 0
D) y 0

5. If f(x) = 2x + 1, find f(3).

6. Is the relation {(1,2), (1,5), (2,3)} a function?

7. If g(x) = x 4, find the input(s) where g(x) = 0.

8. Define: What is a function?

9. Define: What is the domain of a function?

10. Define: What is the range of a function?

Answer Key

1. A) 10 - f(4) = 3(4) 2 = 12 2 = 10.
2. C) {(1,2),(1,3),(2,4)} - Input 1 maps to two outputs (2 and 3), so it fails the function rule.
3. B) Vertical Line Test - The Vertical Line Test checks that each x-value has only one y-value.
4. C) y 0 - Squaring any real number gives a result that is always 0.
5. Substitute x = 3 into the function f(3) = 2(3) + 1 f(3) = 7
6. Check if any input repeats with different outputs Input 1 maps to both 2 and 5 Since one input has two outputs, this is NOT a function
7. Set the function equal to 0: x 4 = 0 Solve: x = 4 x = 2 or x = 2
8. A rule that assigns exactly one output to each input in its domain.
9. The set of all valid input values (x-values).
10. The set of all possible output values (y-values).