



O Level Maths

Topic: Functions and Their Properties

Instructions

Answer all questions. Show all necessary steps. Use function properties and their graphs appropriately.

Practice Problems

Types of Functions:

1. Determine if the following relation is a function:

$$R = \{(1, 2), (2, 3), (3, 4), (4, 5)\}$$

2. Determine if the following relation is a function:

$$S = \{(1, 2), (2, 3), (1, 4)\}$$

3. Given the function $f(x) = 2x + 1$, find $f(3)$.
4. Given the function $g(x) = x^2 - 4x + 3$, find $g(2)$.

Properties of Functions:

5. Find the domain and range of the function $f(x) = \sqrt{x - 3}$.
6. Determine if the function $f(x) = x^3 - 5x + 2$ is even, odd, or neither.
7. For the function $h(x) = \frac{1}{x-2}$, identify its domain and range.
8. Determine if the following function is one-to-one:

$$f(x) = x^2 - 4$$

Multiple-Choice Questions

- Which of the following is a function?
 - $\{(1, 2), (2, 3), (3, 4), (2, 5)\}$
 - $\{(1, 2), (2, 3), (1, 4)\}$
 - $\{(1, 2), (2, 3), (3, 4)\}$
 - $\{(1, 2), (2, 2), (1, 3)\}$
- The range of the function $f(x) = 2x + 5$ for $x = -2, -1, 0, 1, 2$ is:
 - $\{1, 3, 5, 7, 9\}$
 - $\{-1, 1, 3, 5, 7\}$
 - $\{0, 2, 4, 6, 8\}$
 - $\{-3, -1, 1, 3, 5\}$
- What is the domain of the function $f(x) = \frac{1}{x^2-4}$?
 - $x \neq 2$
 - $x \neq 4$
 - $x \neq -2, 2$
 - $x \neq 0$
- Which of the following functions is odd?
 - $f(x) = x^2$
 - $f(x) = x^3$
 - $f(x) = \frac{1}{x}$
 - $f(x) = \sqrt{x}$
- For the function $f(x) = x^2 - 3x + 2$, the value of $f(1)$ is:
 - 0
 - 1
 - 2
 - 1

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