Mathematical Inequalities and Intervals Quiz

Mathematics · Practice Test · 16 Questions

1. Which symbol indicates that endpoints are included in a number line solution?

A) Open circles
B) Closed circles
C) Dashed lines
D) Arrows

2. Why does $x^2-4>0$ produce two separate intervals?

A) Values between roots satisfy
B) Values beyond both roots satisfy
C) The parabola opens downward
D) The vertex is at the origin

3. Why are brackets used in the interval [-3, 3]?

A) Endpoints are excluded
B) Endpoints are included
C) The interval is infinite
D) The values are negative

4. For the garden inequality $x^2-25 < 0$, which values of x satisfy the condition?

A) x < -5 or x > 5
B) -5 < x < 5
C) x > 25
D) x < -25

5. Why does $x^2 - 36 < 0$ use closed circles at -6 and 6?

A) The endpoints are outside the graph
B) The endpoints satisfy the inequality
C) The inequality is greater than zero
D) The boundary is excluded

6. Which set-builder notation represents (-3, 3)?

A) {x | -3 < x < 3}
B) {x | x < -3 or x > 3}
C) {x | x <= -3}
D) {x | x >= 3}

7. Which interval represents the solution of $x^2 - 100 < 0$?

A) (-10, 10]
B) (-10, 10)
C) [-10, 10)
D) (-?, -10)

8. Which solution set satisfies $x^2 - 9 < 0$?

A) $x < -3$ or $x > 3$
B) $-3 < x < 3$
C) $x < 9$
D) $x > 3$

9. Which interval represents all values less than -2?

A) (-2, ?)
B) (-?, -2)
C) [-2, ?)
D) (-?, -2]

10. Which graph represents the inequality $y < x - 9$?

A) A shaded region above a line
B) A shaded region below a line
C) A shaded region inside a circle
D) A shaded region outside a parabola

11. A bridge remains stable when $x^2 - 64 < 0$. Which interval represents stability?

A) Values from -8 through 8
B) Values beyond -8 and 8
C) Values greater than 64
D) Values less than -8

12. Which notation represents the set {x | x < -2}?

A) (-?, -2]
B) (-?, -2)
C) [-2, ?)
D) (-2, ?)

13. Which statement correctly compares $x^2 - 16 < 0$ and $x^2 - 16 > 0$?

A) Their graphs have different vertices
B) Their solution intervals are complementary
C) Both have the same solution set
D) Neither has a solution

14. Which equation forms the boundary of $x^2 + y = 16$?

A) $x - y = 16$
B) $x^2 + y = 16$
C) $x + y = 16$
D) $x^2 + y^2 = 16$

15. Why is the boundary dashed for $x + y < 9$?

A) Because the graph is always decreasing
B) Because the boundary is not included
C) Because the slope is positive
D) Because it is a quadratic equation

16. Why are brackets used in [-5, 5]?

A) -5 and 5 are excluded
B) -5 and 5 are included
C) The interval is empty
D) The values are complex