Interval notation

6 questions | 14 marks

Equivalent correct methods earn the corresponding marks.

1. Write $2 \leq x < 7$ as an interval. [2 marks]

Include 2 and exclude 7.

Answer: $[2, 7)$.

2. Write $(-\infty, -3]$ as an inequality. [2 marks]

The finite endpoint is included and the interval extends left without a bound.

Answer: $x \leq -3$.

3. Find $[-2, 4] \cap [1, 8)$. [2 marks]

The common numbers run from 1 to 4, and both endpoints lie in both sets.

Answer: $[1, 4]$.

4. Find $[0, 3) \cup [2, 5]$. [2 marks]

The intervals overlap, so the union has no gap. Both outside endpoints are included.

Answer: $[0, 5]$.

5. Solve $x^2 > 9$ for real x and write intervals. [3 marks]

The square exceeds 9 when $x < -3$ or $x > 3$; equality is excluded.

Answer: $(-\infty, -3) \cup (3, \infty)$.

6. Describe $[1, 5] \cap \mathbb{Z}$ and explain why it is not the full real interval. [3 marks]

The intersection restricts the interval to integer points, excluding values such as 1.5.

Answer: $\{1, 2, 3, 4, 5\}$.