Multiple choice questions - Simultaneous equations, inequalities and polynomials

Year: Year 12 · 10

Question 1 Solve $x + y = 7$, $x - y = 1$.

- **A.** $x = 4, y = 3$
- **B.** $x = 3, y = 4$
- **C.** $x = 6, y = 1$
- **D.** $x = 5, y = 2$

Question 2 Solving $-3x > 12$ gives

- **A.** $x > -4$
- **B.** x
- **C.** $x > 4$
- **D.** x

Question 3 The solution of $x^2 - 9 > 0$ is

- **A.** -3
- **B.** $x > 3$
- **C.** x or $x > 3$
- **D.** x

Question 4 The solution of $x^2 - 4x$ is

- **A.** x or $x > 4$
- **B.** 0
- **C.** x
- **D.** $x > 0$

Question 5 If $f(2) = 0$ then a factor of $f(x)$ is

- **A.** $(x + 2)$
- **B.** $(x - 2)$
- **C.** $(2x - 1)$
- **D.** $(x - 1)$

Question 6 The remainder when $x^2 + 3x + 1$ is divided by $(x - 1)$ is

- **A.** 5
- **B.** 4
- **C.** 1

- **D.** 0

Question 7 A line meets a curve with discriminant -3 after substitution. The line

- **A.** is a tangent
- **B.** cuts twice
- **C.** does not meet the curve
- **D.** cuts once

Question 8 How many real roots does $y = (x-1)^2(x+4)$ have (distinct)?

- **A.** 1
- **B.** 2
- **C.** 3
- **D.** 0

Question 9 $y = x^3 - x$ crosses the x-axis at

- **A.** $0, 1$
- **B.** $-1, 0, 1$
- **C.** 1 only
- **D.** $-1, 1$

Question 10 Which is the correct solution of $2x + 3$?

- **A.** x
- **B.** $x > 5$
- **C.** x
- **D.** x

Answer grid - Simultaneous equations, inequalities and polynomials

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Question	Answer	Explanation
1	**A**	Add: $2x = 8$.
2	**B**	Divide by -3 and reverse.
3	**C**	Outside the roots for a $\cup$ graph.
4	**B**	$x(x-4)$, between the roots.
5	**B**	Factor theorem.
6	**A**	$f(1) = 1 + 3 + 1 = 5$.
7	**C**	Negative discriminant: no real intersection.
8	**B**	$x = 1$ and $x = -4$.
9	**B**	$x(x-1)(x+1)$.
10	**A**	Subtract x then 3.