

Brett Robbins Academic Consulting

Mathematics 20-1 Practice Test

Unit 7: Systems of Equations and Inequalities

10 Questions

Original practice questions written to the Alberta curriculum, in the style of past diploma examinations. Work through each question, then check your answers with the key at the end.

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, contact Brett for clarification.

Question 1

The number of points of intersection of the graphs of $y = x + 1$ and $y = x^2 - 3$ is

- A) 0
- B) 1
- C) 2
- D) 3

Question 2

The solution to the system $y = x + 2$ and $y = x^2 - 4x + 2$ is

- A) (0, 2) only
- B) (0, 2) and (5, 7)
- C) (2, 0) and (7, 5)
- D) there is no solution

Question 3

The line $y = 2x + 1$ is tangent to the parabola $y = x^2 - 2x + 5$,
so the system has exactly one solution. The y -coordinate of the point of tangency is

Question 4

A point that belongs to the solution region of the system $y > x - 1$ and $y \leq 2x + 3$ is

- A) (0, 0)
- B) (-2, -4)
- C) (2, 8)
- D) (5, 3)

Question 5

The number of real solutions to the system $y = x^2 + 3$ and $y = 2x + 1$ is

- A) 2
- B) 1
- C) 3
- D) 0

Question 6

The solution to the system $y = x^2 - 1$ and $y = -x^2 + 7$ is

- A) (2, 3) only
- B) (-2, -3) and (2, 3)
- C) (-2, 3) and (2, 3)
- D) there is no real solution

Question 7

The height, h , of a ball in metres after t seconds is given by $h = -5t^2 + 30t$.

The later time, in seconds, at which the ball is 25 m above the ground is

Question 8

The constraints of a feasible region are $x \geq 0$, $y \geq 0$, $y \leq -x + 6$, and $y \geq x - 4$.

A point that does NOT belong to the feasible region is

- A) (0, 0)
- B) (5, 2)
- C) (3, 3)
- D) (1, 4)

Question 9

A company models its revenue by $R(x) = -x^2 + 50x$ and its costs by $C(x) = 10x + 400$, where x is the number of items sold. The graphs of the two models intersect at exactly one point.

The number of items sold at this break – even point is

- | | |
|-------|-------|
| A) 10 | B) 30 |
| C) 20 | D) 40 |

Question 10

Two numbers have a sum of 14 and a product of 45.

The larger of the two numbers is

Answer Key

- | | | |
|------|------|-------|
| 1. C | 5. D | 9. C |
| 2. B | 6. C | 10. 9 |
| 3. 5 | 7. 5 | |
| 4. A | 8. B | |

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