

Brett Robbins Academic Consulting

Mathematics 20-1 Practice Test

Unit 6: Absolute Value and Reciprocal Functions

25 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 value of $|-7| + |3 - 8|$ is

- A) 2
B) -2
C) -12
D) 12

Question 2

The solutions to the equation $|x - 4| = 9$ are

- A) $x = -5$ and $x = 13$
B) $x = 5$ and $x = 13$
C) $x = -13$ and $x = 5$
D) $x = 13$ only

Question 3

The vertex of the graph of $y = |x - 3| + 2$ is

- A) $(-3, 2)$
B) $(3, 2)$
C) $(3, -2)$
D) $(-3, -2)$

Question 4

The non-permissible value of x for the function $y = \frac{1}{x+5}$ is

- A) $x = 5$
B) $x = 0$
C) $x = -5$
D) $x = 1$

Question 5

The sum of the solutions to the equation $|2x + 1| = 7$ is _____.

Question 6

The solutions to the equation $3|x + 2| - 5 = 13$ are

- A) $x = 4$ only
B) $x = -4$ and $x = 8$
C) $x = -8$ only
D) $x = -8$ and $x = 4$

Question 7

The range of the function $y = -2|x - 1| + 5$ is

- A) $y \leq 5$
B) $y \geq 5$
C) $y \leq 1$
D) $y \geq 1$

Question 8

For $f(x) = x - 2$, the invariant points of the graph of $y = \frac{1}{f(x)}$ occur when

- A) $x = 1$ and $x = 3$
B) $x = 2$ only
C) $x = -1$ and $x = -3$
D) $x = 0$ and $x = 2$

Question 9

The product of the x -intercepts of the graph of $y = |x + 2| - 6$ is _____.

Question 10

The y -intercept of the graph of $y = |x - 5| - 3$ is

- A) 2
B) -3
C) -8
D) 5

Question 11

The solutions to the equation $|2x - 3| = x + 1$ are

- A) $x = 4$ only
B) $x = \frac{2}{3}$ only
C) $x = \frac{2}{3}$ and $x = 4$
D) no solution

Question 12

The solutions to the equation $|3x - 1| = x - 4$ are

- A) $x = -\frac{3}{2}$ and $x = \frac{5}{4}$
B) $x = \frac{5}{4}$ only
C) $x = -\frac{3}{2}$ only
D) no solution

Question 13

The product of the solutions to the equation $|2x - 5| = |x + 4|$ is _____.

Question 14

The vertical asymptotes of the graph of $y = \frac{1}{x^2 - 5x + 6}$ are

- A) $x = -2$ and $x = -3$
B) $x = -5$ and $x = 6$
C) $x = 2$ only
D) $x = 2$ and $x = 3$

Question 15

The graphs of $y = x^2 - 4$ and $y = \frac{1}{x^2 - 4}$ share invariant points.

The x -coordinates of these invariant points are

- A) $x = \pm 2$
B) $x = \pm\sqrt{3}$ and $x = \pm\sqrt{5}$
C) $x = \pm\sqrt{5}$ only
D) $x = 0$

Question 16

The product of the solutions to the equation $|4x - 3| = 13$ is ____.

Question 17

An absolute value function has vertex $(2, -3)$, opens upward, and passes through the point $(3, 1)$. Its equation is

A) $y = \frac{1}{4}|x - 2| - 3$

B) $y = 4|x - 2| - 3$

C) $y = 4|x + 2| - 3$

D) $y = 4|x - 2| + 3$

Question 18

The graphs of $y = |x - 1|$ and $y = 3$ intersect at points where

A) $x = 2$ and $x = 4$

B) $x = -2$ and $x = 4$

C) $x = -4$ and $x = 2$

D) $x = -2$ only

Question 19

The product of the x -intercepts of the graph of $y = |2x + 4| - 8$ is ____.

Question 20

The domain of the function $y = \frac{1}{x^2 - 1}$ is

A) All real numbers

B) All real numbers except $x = 0$

C) All real numbers except $x = 1$ and $x = -1$

D) All real numbers greater than 1

Question 21

The solutions to the equation $|5 - x| = 2x + 1$ are

- A) $x = -6$ and $x = \frac{4}{3}$ B) no solution
C) $x = -6$ only D) $x = \frac{4}{3}$ only

Question 22

For the function $y = \frac{1}{x^2 - 5x + 4}$, the sum of the non-permissible values of x is _____.

Question 23

Which statement about the graph of $y = \frac{1}{x-4}$ is true?

- A) The graph has a vertical asymptote at $x = -4$
B) The graph has a horizontal asymptote at $y = 0$
C) The graph has an x -intercept at $(4, 0)$
D) The graph passes through the point $(0, \frac{1}{4})$

Question 24

The graph of $y = |x|$ is translated 3 units to the left and 5 units down.

The equation of the resulting graph is

- A) $y = |x - 3| - 5$ B) $y = |x + 3| + 5$
C) $y = |x + 3| - 5$ D) $y = |x - 3| + 5$

Question 25

The sum of the solutions to the equation $|x + 1| = |3x - 5|$ is _____.

Answer Key

- | | | |
|--------|---------|---------|
| 1. D | 10. A | 19. -12 |
| 2. A | 11. C | 20. C |
| 3. B | 12. D | 21. D |
| 4. C | 13. 3 | 22. 5 |
| 5. -1 | 14. D | 23. B |
| 6. D | 15. B | 24. C |
| 7. A | 16. -10 | 25. 4 |
| 8. A | 17. B | |
| 9. -32 | 18. B | |

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