

Brett Robbins Academic Consulting

Mathematics 20-1 Practice Test

Unit 5: Rational Expressions

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 non-permissible values of $\frac{2x+1}{x^2-7x+12}$ are

A) $x \neq -3, x \neq -4$

B) $x \neq 3, x \neq 4$

C) $x \neq 3, x \neq -4$

D) $x \neq -3, x \neq 4$

Question 2

When simplified, $\frac{x^2-4}{x^2+5x+6}$ is equivalent to

A) $\frac{x-2}{x+3}$

B) $\frac{x+2}{x+3}$

C) $\frac{x-2}{x-3}$

D) $\frac{x-2}{x+2}$

Question 3

When simplified, $\frac{4x-8}{x^2-4}$ is equivalent to

A) $\frac{2}{x+2}$

B) $\frac{4}{x-2}$

C) $\frac{4}{x+2}$

D) $\frac{x-2}{x+2}$

Question 4

The sum of the non-permissible values of $\frac{x+3}{x^2-2x-8}$ is _____

Question 5

When simplified, $\frac{3x}{x-1} \cdot \frac{x^2-1}{6x^2}$ is equivalent to

A) $\frac{1}{2x}$

B) $\frac{x-1}{2x}$

C) $\frac{x+1}{6x}$

D) $\frac{x+1}{2x}$

Question 6

When simplified, $\frac{x^2-9}{x} \div \frac{x+3}{x^2}$ is equivalent to

A) $x^2 + 3x$

B) $x^2 - 3x$

C) $x - 3$

D) $3x - x^2$

Question 7

When simplified, $\frac{x^2-3x}{x^2-9}$ is equivalent to

A) $\frac{x}{x+3}$

B) $\frac{x-3}{x+3}$

C) $\frac{x}{x-3}$

D) $\frac{x^2-3x}{x+3}$

Question 8

When $\frac{x^2-25}{x^2+2x-15}$ is simplified and then evaluated at $x=2$,
the value is ____

Question 9

When simplified, $\frac{2}{x} + \frac{3}{x+1}$ is equivalent to

A) $\frac{5}{x(x+1)}$

B) $\frac{5x+2}{2x+1}$

C) $\frac{5x+2}{x(x+1)}$

D) $\frac{2x+5}{x(x+1)}$

Question 10

When simplified, $\frac{4}{x-2} - \frac{1}{x}$ is equivalent to

A) $\frac{3x-2}{x(x-2)}$

B) $\frac{3}{x-2}$

C) $\frac{5x+2}{x(x-2)}$

D) $\frac{3x+2}{x(x-2)}$

Question 11

The solution to the equation $\frac{3}{x} + \frac{1}{2} = \frac{5}{2x}$ is $x = \underline{\hspace{2cm}}$

Question 12

The solution to the equation $\frac{x}{x-2} + \frac{2}{x+2} = \frac{8}{x^2-4}$ is

A) $x = -6$

B) $x = -6$ or $x = 2$

C) $x = 2$

D) $x = 6$

Question 13

When $\frac{x^2-16}{x^2-x-12}$ is written in lowest terms, it can be expressed as $\frac{x+4}{x+a}$.

The value of a is $\underline{\hspace{2cm}}$

Question 14

When simplified, $\frac{x^2-4x-5}{x^2+6x+8} \cdot \frac{x+4}{x-5}$ is equivalent to

A) $\frac{x-1}{x+2}$

B) $\frac{x+1}{x+2}$

C) $\frac{x+1}{x-2}$

D) $\frac{x+5}{x+2}$

Question 15

When simplified, $\frac{1}{x^2+3x+2} + \frac{1}{x^2+4x+3}$ is equivalent to

A) $\frac{2x+5}{(x+2)(x+3)}$

B) $\frac{x+5}{(x+1)(x+2)(x+3)}$

C) $\frac{2x+5}{(x+1)(x+2)(x+3)}$

D) $\frac{2}{(x+1)(x+2)(x+3)}$

Question 16

The solution to the equation $\frac{4}{x+1} = \frac{2}{x-3}$ is $x = \underline{\hspace{2cm}}$

Question 17

Maria can paint a room in 6 hours, and her brother Luis can paint the same room in 9 hours.

Working together, the time, in hours, that they take to paint the room is $\underline{\hspace{2cm}}$

Question 18

When simplified, $\frac{9-x^2}{x^2-6x+9}$ is equivalent to

A) $\frac{x+3}{x-3}$

B) $\frac{3-x}{3+x}$

C) $-\frac{x+3}{3-x}$

D) $\frac{x+3}{3-x}$

Question 19

Consider the equation $\frac{1}{x-2} + \frac{1}{x+2} = \frac{4}{x^2-4}$. Which statement is true?

A) The only solution is $x = 2$

B) The equation has no solution

C) The only solution is $x = -2$

D) The solutions are $x = 2$ and $x = -2$

Question 20

One printer can complete a printing job alone in x minutes.

A second printer takes 5 minutes longer than the first printer to complete the same job.

Working together, the two printers complete the job in 6 minutes.

The time that the faster printer takes to complete the job alone, in minutes, is

- A) 5
B) 6
C) 10
D) 15

Question 21

The positive solution to the equation $\frac{1}{x} + \frac{1}{x+3} = \frac{5}{18}$ is _____

Question 22

When simplified, $\frac{6x^2}{x^2-1} \div \frac{3x}{x+1}$ is equivalent to

- A) $\frac{2x}{x-1}$
B) $\frac{2x}{x+1}$
C) $\frac{2}{x-1}$
D) $\frac{6x}{x-1}$

Question 23

One of the non-permissible values of $\frac{x-5}{2x^2+9x+4}$ is

- A) $\frac{1}{2}$
B) 4
C) 5
D) $-\frac{1}{2}$

Question 24

When simplified, $\frac{3}{x^2-4} - \frac{1}{x+2}$ is equivalent to

A) $\frac{x+5}{(x-2)(x+2)}$

B) $\frac{5-x}{(x-2)(x+2)}$

C) $\frac{5-x}{x-2}$

D) $\frac{2-x}{(x-2)(x+2)}$

Question 25

When simplified, $\frac{2x^2-8}{x^2+4x+4} \cdot \frac{x+2}{x-2}$ is equivalent to

A) 2

B) $2x$

C) $\frac{1}{2}$

D) $\frac{2(x+2)}{x-2}$

Answer Key

- | | | |
|------|---------|-------|
| 1. B | 10. D | 19. B |
| 2. A | 11. -1 | 20. C |
| 3. C | 12. A | 21. 6 |
| 4. 2 | 13. 3 | 22. A |
| 5. D | 14. B | 23. D |
| 6. B | 15. C | 24. B |
| 7. A | 16. 7 | 25. A |
| 8. 3 | 17. 3.6 | |
| 9. C | 18. D | |

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