

Brett Robbins Academic Consulting

Math 30-1 Practice Test

Rational Functions

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 non – permissible values of the function $f(x) = \frac{x+3}{(x-2)(x+5)}$ are

- A) $x \neq 2$
B) $x \neq -5$
C) $x \neq 2$ and $x \neq -5$
D) no restrictions

Question 2

The equation of the vertical asymptote of the graph of $y = \frac{3x+1}{x-4}$ is

- A) $x = -4$
B) $x = 4$
C) $y = 4$
D) $x = 3$

Question 3

The graph of $y = \frac{5x-2}{3x+7}$ has a horizontal asymptote with equation $y = \frac{a}{b}$, where $\frac{a}{b}$ is in lowest terms.

The value of $a + b$ is

Question 4

The graph of $f(x) = \frac{x^2 - 9}{(x - 3)(x + 1)}$ has a vertical asymptote with equation

- A) $x = 3$
B) $x = -3$
C) $x = -1$
D) $x = 1$

Question 5

The solution to the equation $\frac{x}{x-2} = 3$ is

- A) 6
B) 3
C) -3
D) 2

Question 6

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

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

Question 7

The behaviour of the graph of $y = \frac{2x}{x-3}$ near its vertical asymptote is described in row

- A) As $x \rightarrow 3^-$, $y \rightarrow -\infty$
As $x \rightarrow 3^+$, $y \rightarrow +\infty$
- B) As $x \rightarrow 3^-$, $y \rightarrow +\infty$
As $x \rightarrow 3^+$, $y \rightarrow -\infty$
- C) As $x \rightarrow 3^-$, $y \rightarrow +\infty$
As $x \rightarrow 3^+$, $y \rightarrow +\infty$
- D) As $x \rightarrow 3^-$, $y \rightarrow -\infty$
As $x \rightarrow 3^+$, $y \rightarrow -\infty$

Question 8

The point of discontinuity on the graph of $f(x) = \frac{x^2 - x - 6}{x - 3}$ is at

- A) $(-3, 5)$
B) $(3, 2)$
C) $(3, 5)$
D) $(3, -5)$

Question 9

The equation of the oblique asymptote of the graph of $y = \frac{x^2 + 2x + 3}{x + 1}$ is

A) $y = x + 2$

B) $y = x + 1$

C) $y = x$

D) $y = x + 3$

Question 10

The graph of $y = \frac{2x^2 + 3x - 2}{x^2 - x - 6}$ has exactly one vertical asymptote, with equation $x = k$.

The value of k is

Answer Key

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

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