

Rational Expressions and Functions: math test, Grade 11 – download the PDF

Suggested time: 45 minutes. Out of 20 points. Calculator allowed only when the problem says so.

1 Simplifying

/ 3 pts

Simplify and state the restrictions.

a. $\frac{x^2 + 2x - 15}{x^2 - 9}$

b. $\frac{6x^3y}{15xy^2}$

2 Multiplying and dividing

/ 4 pts

Compute and simplify.

a. $\frac{x^2 - 25}{x + 2} \cdot \frac{x^2 + 2x}{x - 5}$

b. $\frac{x^2 - x - 12}{x^2 - 1} \div \frac{x - 4}{x + 1}$

3 Adding and subtracting

/ 4 pts

Write each result as a single fraction.

a. $\frac{4}{x-3} + \frac{2}{x+3}$

b. $\frac{x}{x-5} - \frac{3}{x+1}$

4 Analyzing a function

/ 4 pts

Let $f(x) = \frac{2x+6}{x-4}$.

- Find the vertical and horizontal asymptotes.
- Find the x -intercept and the y -intercept.
- Compute $f(6)$ and $f(2)$.

5 Solving an equation

/ 3 pts

Solve $\frac{3}{x-2} + 1 = \frac{12}{x^2-4}$. Check your answers.

6 Travel time

/ 2 pts

The time t of a trip varies inversely with the speed r . At 45 miles per hour the trip takes 4 hours. How long does it take at 60 miles per hour?



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