

Lesson 1.3.8: Equations Involving Variable Expressions in the Denominator

Targets:

1. I can explain why a number cannot be divided by 0.
2. I can write a system of equations when x is a denominator.

Warm Up

Nolan says that he checks the answer to a division problem by performing multiplication. For example, he says that $20 \div 4 = 5$ is correct because $5 \cdot 4$ is 20 and $\frac{3}{172} = 6$ is correct because $6 \cdot \frac{1}{2}$ is 3.

- a. Using Nolan's reasoning, explain why there is no real number that is the answer to the division problem $5 \div 0$.
- b. Quentin says that $\frac{0}{0} = 17$. What do you think?
- c. Mavis says that the expression $\frac{5}{x+2}$ has a meaningful value for whatever value one chooses to assign to x . Do you agree?
- d. Jamie says that the expression $\frac{3x-6}{x-2}$ always has the value 3 for whichever value one assigns to x . Do you agree?

Practice 1

Rewrite this expression as a compound statement (system of equations): $\frac{10}{x+5}$

Practice 2

Use this expression to answer the following questions: $\frac{x^2-25}{(x^2-9)(x+4)}$

- a. Is it permissible to let $x = 5$ in this expression?
- b. Is it permissible to let $x = 3$ in this expression?
- c. Give all the values of x that are NOT permissible in this expression.

Practice 3

Use this equation to do the following tasks: $\frac{1}{x} = \frac{3}{x-2}$

- a. Rewrite the equation into a system of equations.

- b. Solve the equation for x .

Exit Ticket

Rewrite each equation into a system of equation; then solve the equation for x .

a. $\frac{5}{x} = 1$ System of Equations: $x =$

b. $\frac{1}{x-5} = 3$ System of Equations: $x =$

c. $\frac{x}{x+1} = 4$ System of Equations: $x =$

d. $\frac{2}{x} = \frac{3}{x-4}$ System of Equations: $x =$