Name _____ Class _____ Date _____

Reteaching 11-5

Solving Rational Equations

OBJECTIVE: Solving equations involving rational expressions

MATERIALS: None

Example

Solve the equation $\frac{4}{3x} + \frac{3}{4x} = \frac{5}{2x^2}$.

Step 1 Find the LCD.

$3x = 3 \cdot x$ ← **Factor the denominators. Find where each factor appears the most times and circle it.**

$4x = 2 \cdot 2 \cdot x$

$2x^2 = 2 \cdot x \cdot x$

$3 \cdot 2 \cdot 2 \cdot x \cdot x = 12x^2$ ← **Multiply the circled terms to find the LCD.**

Step 2 Solve the equation.

$12x^2\left(\frac{4}{3x}\right) + 12x^2\left(\frac{3}{4x}\right) = 12x^2\left(\frac{5}{2x^2}\right)$ ← **Multiply each term by the LCD.**

$16x + 9 = 30$ ← **Simplify.**

$25x = 30$ ← **Solve.**

$x = \frac{6}{5}$

Exercises

Solve each equation. If there is no solution, write *no solution*.

1. $\frac{3}{2x} + \frac{5}{6x} = \frac{4}{5x^2}$
2. $\frac{2}{3x} + \frac{4}{5} = \frac{3}{2x}$
3. $\frac{6x}{5} - \frac{1}{2} = \frac{2x}{3}$
4. $\frac{2}{5x} - \frac{5}{2x} = \frac{3}{5x^2}$
5. $\frac{3}{y - 3} = \frac{3}{y^2 - 9}$
6. $\frac{5}{2x - 2} = \frac{15}{x^2 - 1}$
7. $\frac{1}{m - 1} = \frac{3}{m^2 - 1}$
8. $\frac{x}{x - 2} = \frac{3x}{x + 2}$
9. $\frac{4}{x} + 1 = \frac{6}{x}$
10. $\frac{x + 2}{3} = x - 2$
11. $\frac{5}{x} - \frac{4}{x} = 8 + \frac{1}{x}$
12. $\frac{11}{x} + \frac{13}{x} = 12$
13. $\frac{x}{2x} + \frac{2}{4x} = \frac{5x}{x}$
14. $\frac{9}{x} + \frac{6}{5x} = \frac{6}{2x^2}$
15. $\frac{5}{3x} - \frac{x}{x^2} = \frac{1}{6x^2}$
16. $\frac{x}{x + 1} + 2 = 5$
17. $\frac{2}{x - 5} + 1 = \frac{5}{x - 5}$
18. $\frac{21}{x^2} - \frac{10}{x} = \frac{15}{x^2}$
19. $\frac{3}{2x} - \frac{2}{x^2} = \frac{2}{x}$
20. $\frac{3}{x^2 - 9} = \frac{2}{x - 3}$
21. $\frac{5}{x^2 - 4} + \frac{2}{x - 2} = \frac{3}{x + 2}$

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