Solving Rational Equations Part Two

Sometimes you will come across a difficult Rational Equation to solve where your strategies just won't work. Let's take a look at some equations that contain some fractions. In the end, we are still trying to solve for x. To do this we need to follow two steps:

1. Get Common Denominators **(Least Common Multiple)**
2. Solve **JUST** the equation located in the numerator for the variable

$\frac{3}{10} + \frac{6}{10} = \frac{9}{10}$

$\frac{8x}{13} - \frac{4x}{13} = \frac{4x}{13}$

These equations can't be solved for x, but let's look at some that can!

1. $\frac{3x+1}{12} + \frac{7}{12} = \frac{7x}{12}$

$3x+1+7 = 7x$

$3x+8 = 7x$

$-3x \quad -3x$

$\frac{8}{4} = \frac{4x}{4}$

$X = 2$

2. $\frac{3}{3} \cdot \frac{2x}{5} + \frac{1}{3} \cdot \frac{5}{5} = \frac{7x-2}{15}$

$\frac{6x}{15} + \frac{5}{15} = \frac{7x-2}{15}$

$6x+5 = 7x-2$

$-6x \quad -6x$

$5 = x-2$

$+2 \quad +2$

$7 = x$

3. $\frac{x}{3}+\frac{(x+1)}{2}=\frac{x}{1}$ $\cdot\frac{6}{6}$

$\frac{2}{2}\cdot\frac{x}{3}+\frac{(x+1)3}{2\cdot 3}=\frac{x}{1}\cdot\frac{6}{6}$

$\frac{2x}{6}+\frac{3x+3}{6}=\frac{6x}{6}$

$2x+3x+3=6x$

$5x+3=6x$

$-5x \quad -5x$

$3=x$

4. $\frac{m}{5}+\frac{3(m-1)}{2}=\frac{2(m-3)}{1}$

$\frac{2}{2}\cdot\frac{m}{5}+\frac{3m-3}{5\cdot 2}=\frac{(2m-6)\cdot 10}{1\cdot 10}$

$\frac{2m}{10}+\frac{15m-15}{10}=\frac{20m-60}{10}$

$2m+15m-15=20m-60$

$17m-15=20m-60$

$-17m \quad -17m$

$-15=3m-60$

$+60 \quad +60$

$\frac{45}{3}=\frac{3m}{3}$

$15=m$

5. $\frac{3}{4}=\frac{-(x+11)}{4x}+\frac{1}{2x}$

$\frac{x}{x}\cdot\frac{3}{4}=\frac{-x-11}{4x}+\frac{1}{2x}\cdot\frac{2}{2}$

$\frac{3x}{4x}=\frac{-x-11}{4x}+\frac{2}{4x}$

$3x=-x-11+2$

$3x=-x-9$

$+x \quad +x$

$\frac{4x}{4}=\frac{-9}{4}$

$x=-\frac{9}{4}$

Practice 12-6b

Name _____

Solve for x.

1. $\frac{x+3}{2}-\frac{x}{5}=\frac{4x+11}{10}$

2. $\frac{8}{2x}+2=\frac{12}{x}$

3. $\frac{5}{x}+\frac{12}{x^2}=\frac{8}{x}$