Solving Rational Equations Part One

There is no one easy way to solve an equation involving fractions and rational expressions. You must summon all of your strategies for solving equations to do these.

Remember: If you can get: fraction = fraction . . . CROSS MULTIPLY

Some hints may be:

1. Use your calculator to add/subtract fractions with unlike denominators when no variables are involved.

$\frac{2x}{3}+\frac{1}{2}=\frac{5}{6}$

$-\frac{1}{2}\quad -\frac{1}{2}$

$\frac{2x}{3}=\frac{1}{3}$

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

$x=\frac{1}{2}$

2. Find a common denominator to combine terms.

2. $\frac{2x}{3}+\frac{x}{6}=5$

2. $\frac{4x}{6}+\frac{x}{6}=5$

$\frac{5x}{6}=\frac{5}{1}$

$\frac{5x}{5}=\frac{30}{5}$

$x=6$

* 3. If the question offers choices and answers, substitute those answers into the equation to see which one works.

Solve for x: $\frac{3}{5}(x+2)=x-4$

(1) ~~8~~ $6 \neq 4$

(2) 13 $9=9$

(3) ~~15~~ $10.2 \neq 11$

(4) ~~23~~ $15 \neq 19$

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

$\frac{3}{5}x+1.2=x-4$

$-1.2\quad -1.2$

$\frac{3}{5}x=1x-5.2$

$-1x\quad -1x$

$\frac{-.4x}{-.4}=\frac{-5.2}{-.4}$

$x=13$

Solve each of these equations for x.

1. $\frac{2}{x} - 3 = \frac{26}{x}$

$-\frac{2}{x} \quad -\frac{2}{x}$

$-3 = \frac{24}{x}$

$\frac{-3x}{-3} = \frac{24}{-3}$

$x = -8$

2. $\frac{4}{3x} + 7 = 11$

$-7 \quad -7$

$\frac{4}{3x} = 4$

$\frac{12x}{12} = \frac{4}{12}$

$x = \frac{1}{3}$

3. $\frac{3}{4}x + 2 = \frac{5}{4}x - 6$

$-2 \quad -2$

$\frac{3}{4}x = \frac{5}{4}x - 8$

$-\frac{5}{4}x \quad -\frac{5}{4}x$

$-.5x = -8$

$x = 16$

4. $\frac{1}{16}x + \frac{1}{4} = \frac{1}{2}$

$-\frac{1}{4} \quad -\frac{1}{4}$

$\frac{\frac{1}{16}}{\frac{1}{16}}x = \frac{\frac{1}{4}}{\frac{1}{16}}$

$x = 4$

Practice 12-6a

Name _____

Solve for x: $\frac{x}{5}+\frac{x}{2}=14$

(1) 4

(2) 10

(3) 20

(4) 49

2. Solve for x: $\frac{x}{3}+\frac{x+1}{2}=x$

(1) 1

(2) -1

(3) 3

(4) -3

3. Solve for x: $\frac{18}{x}+6=9$

4. Solve for x: $\frac{2}{3}(x-5)=x-6$