Equations involving Algebraic Fractions

We have to occasionally solve equations involving fractions. We have a procedure to follow to help us in this quest.

Solve equations involving fractions

1. Determine the LCD
2. Multiply both sides of the equation by the LCD (this step eliminates the fractions)
3. Solve the resulting equation
4. Check you solution. Sometimes the solution to the resulting equation will not be a solution to the original algebraic problem (it will cause the denominator of the fraction to be zero)

Examples:

$$\frac{t}{4}+\frac{2t}{3}=\frac{55}{12} \quad \text{LCD = 12}$$

$$12(\frac{t}{4}+\frac{2t}{3}=\frac{55}{12})$$

$$12(\frac{t}{4})+12(\frac{2t}{3})=12(\frac{55}{12})$$

$$3t+8t=55$$

$$11t=55$$

$$t=5$$

$$\frac{1}{y}+\frac{1}{2}=\frac{5}{6y}+\frac{1}{3} \quad , \quad \text{LCD = } 6y$$

$$6y(\frac{1}{y}+\frac{1}{2}=\frac{5}{6y}+\frac{1}{3})$$

$$6y(\frac{1}{y})+6y(\frac{1}{2})=6y(\frac{5}{6y})+6y(\frac{1}{3})$$

$$6+3y=5+2y$$

$$3y-2y=5-6$$

$$y=-1$$

since y = -1 will not cause any of the denominators to become zero, it is the solution

$\frac{w}{w-2}+2=\frac{2}{w-2}$, LCD is *w*-2

$(w-2)(\frac{w}{w-2}+2=\frac{2}{w-2})$

$(w-2)(\frac{w}{w-2})+(w-2)2=(w-2)(\frac{2}{w-2})$

$w+2w-4=2$

$3w=6$

$w=2$

But *w* =2 causes the denominator of the fractions to become zero therefore it cannot be a solution. (There is no solution)

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