Solve the following, and give evidence that your solution(s) are correct.

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

2. $\frac{x+3}{12}=\frac{5}{6}$

3. $\frac{x}{5}-\frac{2}{5}=\frac{1}{5}$

4. $\frac{2x}{9}+\frac{5}{9}=\frac{8}{9}$

Two methods to solve the same rational equation: $\frac{x}{2}+\frac{1}{3}=\frac{5}{6}$

Method 1:

1. Rewrite each fraction with a common denominator
2. Add or subtract numerators
3. Set numerators equal to each other since denominators are equal
4. Solve
5. Check solutions

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

Method 2:

1. Find a common denominator
2. Multiply both sides by the common denominator
3. Solve
4. Check solutions

Use either method to solve. Give evidence that your solution(s) are correct. If necessary, remember restrictions.

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

6. $\frac{2x+1}{3} + \frac{x-5}{4} = \frac{9}{2}$

7. $\frac{3}{x} = \frac{8}{x-2}$

8. $\frac{1}{a+2} + \frac{1}{a-2} = \frac{4}{a^2-4}$

What did you notice about the solution in #8?

Extraneous Solution

Solve the following. Remember to check for extraneous solutions.

9. $\frac{4}{3x}+\frac{5}{4}=\frac{3}{x}$

10. $\frac{7}{b+3}+\frac{5}{b-3}=\frac{10b-2}{b^2-9}$

11. $\frac{1}{x-6}+\frac{x}{x-2}=\frac{4}{x^2-8x+12}$

12. $\frac{m+5}{m^2+m}=\frac{1}{m^2+m}-\frac{m-6}{m+1}$

13. $\frac{x-8}{x-4}=2$

14. $\frac{4x-8}{x-2}=4$

15. $\frac{x-4}{x-3}=1$

16. $\frac{1}{2a}-\frac{2}{2a-3}=0$