

Objective - Solving Rational Equations

Solve rational equations that lead to linear and quadratic equations.

Link to section in online textbook.

First, watch [this video](#) to learn how solving rational functions. Since our domain can be restricted, we need to check these values!

Question 1 Solve the rational equation below. Remember to check your solutions to make sure they are valid! If there is no solution, answer “NA”.

$$\frac{8}{4x+5} + 1 = \frac{48}{24x+30}$$

Solution: $x =$

Question 2 Solve the rational equation below. Remember to check your solutions to make sure they are valid! If there is no solution, answer “NA”.

$$-\frac{5}{7x+2} - 5 = \frac{4}{28x+8}$$

Solution: $x =$

Question 3 Solve the rational equation below. Remember to check your solutions to make sure they are valid! If there are more boxes than solutions, answer “NA”.

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

Solutions: $x =$ and $x =$

Question 4 Solve the rational equation below. Remember to check your solutions to make sure they are valid! If there are more boxes than solutions, answer “NA”.

$$-\frac{2x^2}{20x^2+31x+12} - \frac{6x}{4x+3} = \frac{6}{5x+4}$$

Learning outcomes:

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Solutions: $x = -\frac{3}{4}$ and $x = NA$

Question 5 Solve the rational equation below. Remember to check your solutions to make sure they are valid! If there are more boxes than solutions, answer “NA”.

$$\frac{4x^2}{15x^2 + x - 6} + \frac{6x}{3x + 2} = \frac{3}{5x - 3}$$

Solutions: $x = -\frac{1}{68}\sqrt{1545} + \frac{27}{68}$ and $x = \frac{1}{68}\sqrt{1545} + \frac{27}{68}$

Question 6 Main takeaway: Before looking, you should work through the previous problems. Have you finished working through the examples?

Feedback(correct): To solve rational equations, we want to multiply to remove the denominators. When in doubt, multiply by the denominator of each one at a time. This may not always be the most efficient way (multiplying by the GCD would be) it will eventually get the equation into a more manageable form. Like with radical functions, we also need to check our solutions to make sure they are valid – that we are not dividing by 0.