

Mth 28, Homework 6 on sections 7.3, 7.4

Due by Wed, Mar 13.

Please use lots of space and explain your answers, showing clearly any work you had to do. Each question is worth 2 points.

(1) Simplify the complex fraction: $\frac{\frac{2}{5} + \frac{4}{5}}{\frac{1}{5} + \frac{1}{10}}$

(2) Simplify the complex rational expression: $\frac{\frac{4}{a^2} - \frac{1}{ab}}{\frac{3}{a} + \frac{8}{b}}$

(Your final answer should have $a(8a + 3b)$ on the bottom.)

(3) Simplify: $\frac{\frac{x}{x^2-4} + 1}{\frac{x}{x+2} - 1}$

(4) Simplify: $\frac{\frac{3x}{x-1} - \frac{1}{2}}{5x + 1}$

(5) Give an example of a rational expression and an example of a rational equation. What is the difference?

(6) Solve this rational equation using the following steps: $\frac{2}{x} + \frac{1}{2} = \frac{7}{6}$

(a) Find the LCD of all the fractions on both sides. This is the smallest expression that has x , 2 and 6 as factors.

(b) Multiply everything on both sides by this LCD. This clears away all the fractions.

(c) Solve the linear equation you get in the usual way.

(d) For rational equations it is important to check your answer works in the original equation and you are not dividing by zero anywhere. Any numbers that lead to division by zero are not solutions.

(7) Solve: $\frac{3}{x+4} + \frac{7}{x-4} = \frac{-4}{x^2-16}$

(Hint: use the same steps as the previous question.)

(8) Solve: $\frac{15}{x^2+x-6} - \frac{3}{x-2} = \frac{2}{x+3}$

(Does the solution you found really work in the original equation?)

(9) Solve: $\frac{y}{y+3} + 1 = \frac{-4}{y^2-9}$

(There are two solutions and one of them is $5/2$.)

If you get stuck on a question or aren't sure if you understand it:

- Go over the relevant class notes and section in the textbook.
- Check if you get the right answer for a similar odd-numbered question in the textbook (answers at the back of the book).
- Ask me about it after class.
- Come to my office hours: Mon 12:00 - 1:00, Wed 12:00 - 1:00 in CP 317.
- Go to the Math Tutorial Lab in-person in CP 303 or online.