

Math 102 Group Assignment 4/14/08

Names of all group members PRESENT _____

This assignment will count for a quiz grade, and covers the material we would have covered in a normal class today if the weather had cooperated.

For the last two days, we have studied finding the least common denominator for a group of fractions, and rewriting fractions so that they have a new denominator. The point, of course, was that to add or subtract fractions, you first have to be sure that they all have the same denominator. If they don't, you simply can't add or subtract them, period.

The reason why is that when two fractions DO have the same denominator, adding or subtracting them is easy – you just add or subtract the numerators and leave the denominators the same. Here's why that makes perfect sense:

Consider the addition problem $\frac{1}{5} + \frac{3}{5}$. Read it out loud: "One fifth plus three fifths". Now replace "fifth" with "beer": "One beer plus three beers is four beers". Obviously, if you have one of something and add three more, you now have four of the them. The "beers" part stays the same, as do the "fifths" in the fractions. Easy!

1) Add or subtract as indicated.

a) $\frac{5}{x^2} + \frac{6}{x^2} - \frac{10}{x^2}$

b) $\frac{x}{2x-5} + \frac{2+3x}{2x-5}$ (Don't forget to simplify when you add the numerators!)

Let's look at an example where building up the fraction is a bit more challenging.

$$3) \frac{2}{x^2 - 16} - \frac{2x}{x^2 + 5x + 4}$$

a) Factor each denominator completely, then use the factors to find the LCD for the fractions. (Hint: Your LCD should have three factors))

b) Build up the two fractions so that they have the common denominator by multiplying each numerator and denominator by the one factor from the LCD that the fraction's denominator is lacking.

c) Now the two fractions should have the same denominator, so you can perform the subtraction. Be careful with the numerator: there will be some parentheses to multiply out and like terms to combine.

Now you're ready to leave the nest and fly on your own. I know you'll make me proud as hell. In the remaining problems, perform the indicated operations or operations, then make sure your answer is simplified as much as possible. This includes considering any reducing that can be done. Even though I'm not writing out parts a, b, and c as in the previous questions, that's exactly how you should approach these.

$$4) y + \frac{3}{7b}$$

$$5) \frac{1}{a^5b} - \frac{5}{ab^3}$$

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

$$7) \frac{x-1}{x^2-x-12} + \frac{x+4}{x^2+5x+6}$$

$$8) \frac{4}{3n} + \frac{2}{n+1} + \frac{2}{n^2+n}$$

Homework: p. 402: 51 – 71 odd; p. 409: 23-31 odd; 35-41 odd; 51-71 odd. This is a lot to be sure, but it's a topic that requires a lot of practice for most people.