Name: _____

MATH 1010 LAB ACTIVITY – Rational Functions

For this lab we will work on skills for working with rational expressions.

In Chapter Six, we'll be working with rational expressions. It will be helpful to keep in mind all the rules you already know for working with fractions (rational numbers).

Remember that $\frac{9+6}{3} = (9+6)/3 = \frac{1}{3}(9+6) = \frac{9}{3} + \frac{6}{3}$. Stop and look carefully at that!

Also recall that $\frac{9+6}{3} \neq \frac{9}{3} + 6$. $\left(\frac{9+6}{3} = \frac{15}{3} = 5 \text{ and } \frac{9}{3} + 6 = 3 + 6 = 9 \right)$.

You also can't do this: $\frac{9+6}{3} \neq 9 + \frac{6}{3}$. $\left(\frac{9+6}{3} = \frac{15}{3} = 5 \text{ and } 9 + \frac{6}{3} = 9 + 2 = 11 \right)$.

Practice with Fractions

Use order of operations to find which answer is equivalent for the following problems:

1. $\frac{3+6*4}{3} =$

   a. $3 + \frac{6*4}{3}$ b. $\frac{3}{3} + 6*4$ c. $\frac{3}{3} + \frac{6*4}{3}$

2. $\frac{4}{3} + \frac{8}{3} =$

   a. $\frac{12}{6}$ b. $\frac{12}{3}$ c. $4*3+8*3$

3. $10 + \frac{7}{5} =$

   a. $\frac{17}{5}$ b. $2 + \frac{7}{5}$ c. $\frac{50+7}{5}$

Check with your lab buddy to be sure you agree on these.

Checking Solutions

One of the great things about factoring problems is that you can check your factorization by multiplying the factors back together.

1. Check to see if the given factorization is correct by multiplying it out.

$$m^2+2mn+n^2-4=(m+n+2)(m+n-2)$$

We can do a similar process when dividing or simplifying rational functions. Say we divide $36x-24$ by 4 and get $9x-6$. To check if $\frac{36x-24}{4}$ and $9x-6$ are the same, we use multiplication. If $36x-24$ divided by 4 is $9x-6$, then $9x-6$ times 4 should be $36x-24$.

$$(9x-6)*4=4*9x-4*6=36x-24$$

2. Use multiplication to determine if $\frac{12x-4}{4}$ and $12x-1$ are the same.

3. Use multiplication to determine if $\frac{6x^2+19x+10}{2x+5}$ and $3x+2$ are the same.

4. Use multiplication to determine if $\frac{50x^2-25x-7}{5x+1}$ and $10x-7$ are the same.

Spot the Error

Work with your lab buddy to discuss the following three problems

1. Felicia was asked to add the fractions $\frac{4}{3}+\frac{8}{3}$. She wrote $\frac{4}{3}+\frac{8}{3}=\frac{12}{6}=2$. Explain what Felicia did wrong, using complete sentences. Then perform the operation correctly.

2. Carl was asked to simplify the expression $\frac{4-8x}{8}$. He wrote down $4-x$ as his answer. Explain what Carl did wrong, using complete sentences. Then perform the operation correctly.

3. Keiko was asked to add the fractions $\frac{x}{3}+\frac{x}{9}$. She wrote down $\frac{x}{12}$ as her answer. Explain what Keiko did wrong, using complete sentences. Then perform the operation correctly.