Secondary Math 3   Name_____

4.3: Adding and Subtracting Rational Expressions

1) A minivan gets 10% better gas milage when there are no passengers in the vehicle. A mom is taking her son and his friends on a week long camp at the local university. Let m be the number of miles per gallon of gasoline the van gets when it is loaded with the children. The mom drops off the children and returns home alone. What is the expression for the number of gallons of gasoline the van uses if it travels 100 miles in one direction?

2) A rollerblader rides 2 miles out and then rides back. Her speed is reduced by 15% because of the wind. Let r be his speed in miles per hour riding out. What expression represents the total time in hours riding out and back?

3) Suppose your friend was absent today. How would you explain to your friend how to add and subtract rational expressions?

Simplify each expression.

4) $\dfrac{4x}{8x^3y} - \dfrac{x+5y}{8x^3y}$

5) $\dfrac{3a+6b}{20a^3} + \dfrac{a-3b}{20a^3}$

6) $\dfrac{5a-3b}{9a^2b} + \dfrac{3}{9a^2b}$

7) $\dfrac{m-3n}{12mn^3} - \dfrac{m-5n}{12mn^3}$

8) $\dfrac{7}{p+5} + \dfrac{3}{4p^2}$

9) $\dfrac{5x}{x-3} - \dfrac{x-1}{5x+5}$

10) $\dfrac{3}{3k} - \dfrac{5}{3k-21}$

11) $\dfrac{5m}{m+2} + \dfrac{7}{7m}$

12) $\dfrac{x-6}{x+6} + \dfrac{7-x}{x+2}$

13) $\dfrac{b+4}{b^2-10b+24} - 4$

14) $\dfrac{8b}{5b + 25} + \dfrac{b + 4}{7b + 7}$

15) $\dfrac{6}{n + 2} + \dfrac{2}{2n + 2}$

SPIRAL REVIEW

16) Write a polynomial function of least degree with integer coefficients that has the given zeros:
   -4, 0, 2

17) Write a polynomial function of least degree with integer coefficients that has the given zeros:
   0, 0, 12i

18) Use the Rational Root Theorem to state all possible roots for the following functions:
   a) $f(x) = -2x^3 - 3x^2 + 6x - 18$ b) $f(x) = -7x^4 - x - 9$

19) What is the Fundamental Theorem of Algebra and how can it help you in solving problems?