Secondary Math 3 Homework   Name_____
4.1: Simplifying Rational Expressions

1) The length of a rectangular prism is 9 more than the width. The volume is $x^3 + 8x^2 - 9x$. What is the simplified expression for the height of the prism?

2) Write a rational expression that has 4 and -3 as excluded values.

3) A square has a side length of $x + 4$ and a rectangle with height 2x+8 has the same area as the square. What is the length of the rectangle?

Simplify each and state the excluded values.

4) $\dfrac{k + 3}{k^2 + 8k + 15}$

5) $\dfrac{x^2 + 2x + 1}{x + 1}$

6) $\dfrac{n - 2}{n^2 - 7n + 10}$

7) $\dfrac{20n^2 + 12n}{12n}$

8) $\dfrac{6b^2 - 14b}{4b^2 + 6b}$

9) $\dfrac{b^2 + b - 12}{b^2 - 9b + 18}$

10) $\dfrac{9m - 27}{m^2 - 11m + 24}$

11) $\dfrac{n^2 + 6n + 9}{n^2 + 9n + 18}$

12) $\dfrac{21p^2 + 35p}{21p^2 - 28p}$

13) $\dfrac{r^2 - 6r + 9}{r^2 - 10r + 21}$

14) $\dfrac{n^2 - 36}{n^2 - n - 42}$

15) $\dfrac{k^2 + 14k + 48}{k^2 - 4k - 60}$

16) $\dfrac{18x^3 + 30x^2 + 12x}{42x^3 + 90x^2 + 12x}$

17) $\dfrac{2x + 16}{5x^3 + 39x^2 - 8x}$

Perform the following operations

18) $\dfrac{1}{3} \cdot \dfrac{2}{5}$

19) $\dfrac{11}{5} \div 2$

20) $\dfrac{3}{4} + \dfrac{2}{3}$

21) $\dfrac{8}{12} - \dfrac{3}{8}$

SPIRAL REVIEW

22) Describe the end behavior both formally and informaly for the following polynomials and then state the possible number of turning points:

a) $f(x) = -x^4 + 4x^2 - 2$

a) $f(x) = -x^7 + 9x^3 - x + 1$

23) Graph the function $f(x) = -x^4 - x^2 + 2$ and state the following:

a) Zeros:

b) Relative Minimums:

c) Relative Maximums:

d) y - intercept:

e) Domain:

f) Range: