Secondary III 5-2 HW Name: _____

Adding and Subtracting Rational Functions (9.1)

Given a rational expression, identify the excluded values by finding the zeroes of the denominator.

1. $\dfrac{x-1}{x^2+3x-4}$

2. $\dfrac{4}{x(x+17)}$

Write the given expression as an equivalent rational expression that has the given denominator.

3. Expression: $\dfrac{x-7}{x+8}$

Denominator: x^3+8x^2

Simplify the given expression:

6. $\dfrac{-x-8}{x^2+9x+8}$

7. $\dfrac{6x^2+5x+1}{3x^2+4x+1}$

8. $\dfrac{x^4-1}{x^2+1}$

Find the LCD for each set of rational expressions

11. $\dfrac{4x+12}{x^2+5x+6}$ and $\dfrac{5x+15}{10x+20}$

12. $\dfrac{-11}{x^2-3x-28}$ and $\dfrac{2}{x^2-2x-24}$

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Add or subtract the given expressions, simplifying each result and noting the combined excluded values

15. $\frac{1}{1+x} + \frac{1-x}{x}$

16. $\frac{x+4}{x^2-4} + \frac{-2x-2}{x^2-4}$

20. $\frac{1}{x^2+3x-4} - \frac{1}{x^2-3x+2}$

21. $\frac{3}{x^2-4} - \frac{x+5}{x+2}$

26. An auto race consists of 8 laps. A driver completes the first 3 laps at an average speed of 185 miles per hour and the remaining laps at an average speed of 200 miles per hour. Let d represent the length of one lap. Find the time in terms of d that it takes the driver to complete the race.

29. Match each expression with the correct excluded value(s).

a. $\frac{3x+5}{x+2}$ _____ no excluded values

b. $\frac{1+x}{x^2-1}$ _____ $x \neq 0, -2$

c. $\frac{3x^4-12}{x^2+4}$ _____ $x \neq 1, -1$

d. $\frac{3x+6}{x^2(x+2)}$ _____ $x \neq -2$

31. **Communicate Mathematical Ideas** Write a rational expression with excluded values at $x = 0$ and $x = 17$.

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Selected Answers:

1. $x \neq 1, x \neq -4$

3. $\frac{x^2(x-7)}{x^3+8x^2}$ *or* $\frac{x^3-7x^2}{x^3+8x^2}$

7. $\frac{(2x+1)}{(x+1)}$

11. LCD: $10(x+2)(x+3)$

15. $\frac{-x^2+x+1}{x(1+x)}$, $x \neq 0, -1$

21. $\frac{-x^2-3x+13}{(x+2)(x-2)}$, $x \neq \pm 2$

29. C, D, B, A