Name: _____

Operations with Rational Functions

Exercise 1: Perform the indicated operations and simplify. (Whenever possible, write both the numerator and denominator of the answer in factored form.)

1) $\frac{2x}{5}+\frac{3y}{7}$

2) $\frac{4a}{5}-\frac{2b}{3}$

3) $\frac{3}{4a}-\frac{2}{9b}$

4) $\frac{7}{2c}+\frac{5}{3c}$

5) $\frac{7}{x^2y^2}+\frac{2}{xy^5}$

6) $\frac{3}{a^4b^7}-\frac{2}{a^5b^4}$

7) $\frac{x+8}{x+5}+\frac{x+7}{x+5}$

8) $\frac{x-3}{x-1}-\frac{4x-6}{x-1}$

9) $\frac{3x+2}{5x-20}-\frac{2x+6}{5x-20}$

10) $\frac{2x+3}{4x-3}+\frac{10x-9}{4x-3}$

11) $\frac{2}{x-1}+\frac{3}{x-5}$

12) $\frac{5}{x+4}+\frac{6}{x+7}$

13) $\frac{3}{x}+\frac{8}{x+1}$

14) $\frac{-5}{x}+\frac{2}{x-4}$

15) $\frac{3}{x+1}-\frac{4}{x+2}$

16) $\frac{1}{x-2}-\frac{2}{x+2}$

17) $\frac{6}{x-3}-\frac{2}{x+7}$

18) $\frac{5}{x-3}+\frac{x+4}{3-x}$

19) $\frac{7}{x+9}-\frac{4}{x-2}$

20) $\frac{x}{5-x}-\frac{2-x}{x-5}$

21) $3-\frac{2}{x+5}$

22) $4+\frac{5}{x-7}$

23) $\frac{7}{x-2}+2$

24) $\frac{6}{x-3}-4$

25) $\frac{x+4}{x+1}+\frac{2}{x-3}$

26) $\frac{x-3}{x+3}-\frac{1}{x-3}$

27) $\frac{x-2}{x}-\frac{3}{x+2}$

28) $\frac{x}{x+3}+\frac{4}{x-5}$

29) $\frac{x-1}{x+1}+\frac{1}{2x+1}$

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

31) $\frac{x-3}{x+2}+\frac{x+1}{x-4}$

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

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

34) $\frac{x-4}{x+1}-\frac{x-2}{x-1}$

35) $\frac{7}{8x+12}+\frac{5}{6x-6}$

36) $\frac{5}{12x-6}-\frac{2}{10x+40}$

37) $\frac{3}{x}-\frac{8}{x-1}+\frac{6}{x+2}$

38) $\frac{2}{x+3}-\frac{4}{x-2}+\frac{3}{x}$

39) $5-\frac{4x^2+3}{x^2-2x-8}$

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

41) $\frac{x}{x^2+2x-8}-\frac{2}{x^2-2x}+\frac{5}{x^2+4x}$

42) $\frac{x}{x^2+10x+24}+\frac{4}{x^2+12x+32}-\frac{2}{x^2+14x+48}$

43) $\frac{x}{x^2-7x+12}-\frac{2}{x^2-4x+3}+\frac{3}{x^2-5x+4}$

44) $\frac{x}{x^2+3x-18}+\frac{1}{x^2+6x}-\frac{1}{x^2-3x}$

Exercise 2: Let $f(x)=\frac{35x^2-25x}{x^2-36}$ and $g(x)=\frac{6-x}{15x^4}$.

1) Find the domain of $f(x)$ and $g(x)$
2) Find an equation of the product function $f(x)\bullet g(x)$.

Exercise 3: Let $f(x)=\frac{x-1}{x+1}$ and $g(x)=\frac{x+1}{x-1}$.

1) Find the domain of $f(x)$ and $g(x)$
2) Find an equation of the difference function $f(x)-g(x)$.
3) Find an equation of the product function $f(x)\bullet g(x)$.

Exercise 4: Let $f(x)=\frac{3}{12x^3-22x^2+6x}$ and $g(x)=\frac{x+1}{30x^2-10x}$.

1) Find the domain of $f(x)$ and $g(x)$
2) Find an equation of the sum function $f(x)+g(x)$.
3) Find an equation of the difference function $f(x)-g(x)$