Name: _____

Operations with Rational Functions

Exercise 1: Multiply the following rational expressions and simplify. No answers should contain negative exponents.

1) $\frac{-ab^4}{c^5d^8}\cdot\frac{-c^7d^3}{a^6b^9}$

2) $\frac{x^5y^6}{w^3z^8}\cdot\frac{wz^3}{x^{10}y^9}$

3) $\left(-\frac{m^8n^2}{p^3t^5}\right)\cdot\left(-\frac{n^4t^6}{m^5}\right)\cdot\left(-\frac{p^6t^2}{m^3n^7}\right)$

4) $\left(\frac{x^3y^4}{ab^2}\right)\cdot\left(-\frac{a^8b^2}{x^7y^7}\right)\cdot\left(-\frac{x^2y^3a^4}{b^5y}\right)$

5) $-2x^2\cdot\frac{3}{6x^5}$

6) $6x^4\cdot\frac{5}{2x}$

7) $\frac{x+5}{x-3}\cdot\frac{x-3}{x-10}$

8) $\frac{x+6}{x-1}\cdot\frac{-5}{x+6}$

9) $(x-2)\cdot\frac{x-5}{x-2}$

10) $(x+1)\cdot\frac{x-3}{x+1}$

11) $(7-x)\cdot\frac{-5x}{x-7}$

12) $(x-2)\cdot\frac{3}{2-x}$

13) $(x-5)\cdot\frac{3x+2}{5-x}$

14) $(3-x)\cdot\frac{2x+1}{x-3}$

15) $(x-4)\cdot\frac{3}{5x-20}$

16) $(4x+28)\cdot\frac{-2}{x+7}$

17) $(2x+8)\cdot\frac{3x-4}{3x+12}$

18) $(3x-3)\cdot\frac{2x-2}{4x+4}$

19) $\frac{6x-12}{x+3}\cdot\frac{4x+12}{3x-6}$

20) $\frac{x+7}{2x-8}\cdot\frac{6x-24}{5x+35}$

21) $\frac{6x-10}{5x}\cdot\frac{3}{15-9x}$

22) $\frac{2x}{6x-9}\cdot\frac{4x-6}{x^2+x}$

23) $\frac{x^2+x-6}{x^2+3x-4}\cdot\frac{x^2-6x+5}{x^2-2x-15}$

24) $\frac{x^2-x-2}{x^2+8x+15}\cdot\frac{x^2-x-12}{x^2-9x+14}$

25) $\frac{x^2+3x-10}{6x^2-24x}\cdot\frac{2x^2-4x}{x+5}$

26) $\frac{6x^2-30x}{x^2-x-6}\cdot\frac{x^2+4x-21}{40x-8x^2}$

27) $\frac{x+4}{3-x}\cdot\frac{x^2-9}{x^2+16}$

28) $\frac{x^2-25}{x+6}\cdot\frac{x^2+12x+36}{x+5}$

29) $\frac{2x^2+9x+10}{x^2+5x+6}\cdot\frac{x^2+7x+12}{2x^2+3x-5}$

30) $\frac{x^2+2x-8}{3x^2+16x+5}\cdot\frac{3x^2-14x-5}{x^2-x-20}$

31) $\frac{ax-bx+ay-by}{ax+7x-3a-21}\cdot\frac{ax+7x+2a+14}{ax-bx+2a-2b}$

32) $\frac{ac-2ad-bc+2bd}{ac+ad-bc-bd}\cdot\frac{c^2-d^2}{3ac-3ad+bc-bd}$