Name: Key TA: _____

Math 11 Pre-Calculus LG 10 Ver B

1. Write each rational expression in simplest form. State any non-permissible values for the variables.

a) $\frac{x(x+2)}{5x(x+2)} = \frac{1}{5}$

$x \neq 0, -2$

b) $\frac{3x-3}{6-6x} = \frac{3(x-1)}{6(1-x)} = \frac{3(x-1)}{-6(x-1)}$

$x \neq 1$ $= -\frac{1}{2}$

c) $\frac{x^2+2x-24}{2x^2-72} =$

$= \frac{(x+6)(x-4)}{2(x+6)(x-6)}$

$= \frac{(x-4)}{2(x-6)}$

$x \neq \pm 6$

d) $\frac{3x^2-13x-10}{x^2+10x+25} = \frac{(3x+2)(x-5)}{(x+5)(x+5)}$

$x^2 - 10x + 25$

$= \frac{3x+2}{x-5}$

$x \neq 5$

2. Multiply or divide each rational expression.

a) $\frac{5(x+y)}{(x-2)(x+1)} \times \frac{(x-2)(x+4)}{10(x+y)}$

$\frac{(x+4)}{2(x+1)}$

b) $\frac{15x^2}{4y} \div \frac{10x}{y^2} = \frac{15x^2}{4y} \times \frac{y^2}{10x}$

$= \frac{3xy}{8}$

c) $\dfrac{x^2-5x-24}{x^2-11x+24} \div \dfrac{2x^2+7x+3}{x^2+x-12}$

$= \dfrac{(x-8)(x+3)}{(x-8)(x-3)} \times \dfrac{(x+4)(x-3)}{(2x+1)(x+3)}$

$= \boxed{\dfrac{x+4}{2x+1}}$

d) $\dfrac{4x^2-25}{2x^2-13x+20} \times \dfrac{x-4}{4x+10}$

$\dfrac{(2x+5)(2x-5)}{(2x-5)(x-4)} \times \dfrac{(x-4)}{2(2x+5)}$

$= \boxed{1}$

3. Add or subtract. Give answers in simplest form.

a) $\dfrac{3}{5ab^3} + \dfrac{7}{10a^2b}$ $\quad 2ab \cdot 2ab \cdot b^2 \cdot b^2$

$= \boxed{\dfrac{6a^2 + 7b^2}{10a^2b^3}}$

b) $\dfrac{2x}{x^2+3x+2} - \dfrac{x-6}{x^2-x-6}$

$\dfrac{(x-3)\ 2x}{(x-3)(x+2)(x+1)} - \dfrac{x-6}{(x-3)(x+2)} \times \dfrac{*(x+1)}{(x+1)}$

$\dfrac{2x^2-6x-x^2+5x+6}{(\ )(\ )(\ )} = \dfrac{x^2-x+6}{(\ )(\ )(\ )}$

$\dfrac{(x-3)(x+2)}{(x+1)(x+2)(x-3)} = \boxed{\dfrac{1}{x+1}}$

4. Simplify each rational expression.

a) $\dfrac{3x+12}{3x^2-5x-12} \times \dfrac{x-3}{x+4} \div \dfrac{15}{3x+4}$

$\dfrac{3(x+4)}{(3x+4)(x-3)} \times \dfrac{(x-3)}{(x+4)} \times \dfrac{(3x+4)}{15}$

$= \boxed{\dfrac{1}{5}}$

b) $\dfrac{2x}{x^2-9} + \dfrac{x}{x^2+6x+9} - \dfrac{3}{h-3}$

$\dfrac{2x}{(x+3)(x-3)} + \dfrac{x}{(x+3)(x+3)} - \dfrac{3}{(x-3)}$

$\dfrac{2x^2+6x+x^2-3x-3x^2-18x-27}{(\ )(\ )(\ )}$

$\dfrac{-12x-27}{(\ )(\ )(\ )} = \boxed{\dfrac{-3(4x+9)}{(x-3)(x+3)(x+3)}}$