Math 31 Name Key

Rationals Date _____

cause ÷ zero

1. Identify the non-permissible values and simplify both the following.

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

$x \neq 4$

$x \neq -\frac{3}{2}$

b) $\frac{x^2+x-20}{x^2-25}$

$= \frac{(x+5)(x-4)}{(x+5)(x-5)}$

$x \neq 5 \quad x \neq -5$

2. Simplify the following expressions.

a) $\frac{6x+9}{x^2+3x} \div \frac{12x^2+18x}{12x+4x^2}$

$= \frac{3(2x+3)}{x(x+3)} \times \frac{4x(3+x)}{6x(2x+3)}$

$= \frac{(3)(4x)}{(x)(6x)}$

$= \frac{2}{x}$

b) $\frac{2x^2+11x+15}{x^2+2x-3} \times \frac{x^2-3x+2}{4x^2+8x-5}$

+6, +5 -3, -1 +10, -2 +3, -1

$= \frac{(2x+5)(x+3)}{(x+3)(x-1)} \cdot \frac{(x-2)(x-1)}{(2x+5)(2x-1)}$

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

common denominator

3. Simplify the following expressions.

$\left[\frac{x+5}{4}+\frac{x+2}{6}\right]\frac{2}{2}$

$= \frac{3x+15}{12} + \frac{2x+4}{12}$

$= \frac{5x+19}{12}$

$\frac{(x+3)}{(x+3)}\frac{x+1}{5} - \frac{x+2}{x+3}\left(\frac{5}{5}\right)$

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

$= \frac{x^2+4x+3-5x-10}{5(x+3)}$

$= \frac{x^2-x-7}{5(x+3)}$

4. Solve.

a) $\left[x-\frac{7}{2}=\frac{2}{x}\right]2x$

quad = 0
$(f_1)(f_2)=0$

$2x^2-7x=4$

$2x^2-7x-4=0$

$(2x+1)(x-4)=0$

$2x+1=0 \quad x-4=0$

$x=-\frac{1}{2} \quad x=4$

b) $\left[x-\frac{8}{x+5}=4\right]x+5$

$x^2+5x-8=4x+20$

$x^2+x-28=0$

$x=\frac{-1\pm\sqrt{(1)^2-4(1)(-28)}}{2(1)}$

$x=\frac{-1\pm\sqrt{113}}{2}$