Quiz 6.1

1. (2 point) Multiply the rational expression. Simplify the product, if possible.

$$\frac{x^2-5x+6}{x^2+2x-8}\cdot(x+4)$$

2. (3 point) Divide the rational expression. Simplify the quotient if possible.

$$\frac{\dfrac{p^2-4p-5}{2p^2-3p-2}}{\dfrac{p^2+p}{p^2+p-6}}$$

3. (1 point) Make up a rational expression that is undefined at x = 3.

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6.2 Adding and Subtracting Rational Expressions

perform the indicated operation

$$\frac{9}{7}+\frac{3}{7} = \frac{12}{7}$$

$$\frac{x^2-3x+6}{x+3}+\frac{7x-3}{x+3} = \frac{x^2+4x+3}{x+3}$$

$$\frac{(x+3)(x+1)}{(x+3)} = x+1 \qquad x\neq -3$$

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perform the indicated operation

$$\frac{(3x-5)}{x+1}-\frac{(x+3)}{x+1} = \frac{2x-8}{x+1} = \frac{2(x-4)}{(x+1)} \qquad x\neq -1$$

You try

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

$$\frac{4x+3}{x+5}-\frac{x-6}{x+5}$$

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perform the indicated operation

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

$-x+2$

$-(x-2)$

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

$-\frac{3}{4}$ $\frac{3}{-4}$ $-\frac{3}{4}$

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You try

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

$-x+5$

$-(x-5)$

$\frac{4x}{x-5}-\frac{3}{x-5}$

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Find the least common denominator

$\frac{1}{6}$ (14, 24) and $\frac{5}{8}$ (15, 24)

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Find the least common denominator

$$\frac{4}{3x^2y^2} \text{ and } \frac{5}{3xy^3}$$

$3x^2y^3$

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Find the least common denominator

$$\frac{x-1}{x^2+4x+3} \text{ and } \frac{3x-5}{x^3+2x^2+x}$$

$(x+3)(x+1)$ $x(x+1)(x+1)$

LCD: $x(x+3)(x+1)^2$

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You try

$$\frac{4x-3}{x^2-5x-14} \text{ and } \frac{x+1}{x^2+4x+4}$$

$(x-7)(x+2)$ $(x+2)(x+2)$

LCD: $(x-7)(x+2)^2$

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Add and simplify

$$\frac{1}{6}-\frac{5}{8}$$

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Add and simplify LCD: $24x^2$

$$\frac{3(3)}{8x^2(3)}+\frac{1}{12x}\frac{(2x)}{(2x)}$$

$\frac{9}{24x^2} + \frac{2x}{24x^2} = \frac{2x+9}{24x^2}$, $x \neq 0$

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You try

$$\frac{3}{10a}+\frac{4}{15a^2}$$

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perform the indicated operation and simplify

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

LCD: $(x+3)(x+2)$

$2(x^2+2x-1)$

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

$$=\frac{2x^2+4x-2}{(x+3)(x+2)}=\frac{2(x^2+2x-1)}{(x+3)(x+2)},\ x\neq -3,-2$$

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perform the indicated operation and simplify

LCD: $(x+4)(x-2)(x-4)$

$$\frac{(x-4)(x-1)}{x^2+2x-8}+\frac{(x-1)(x-2)}{x^2-16}$$

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

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

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

$$\frac{2x^2-8x+6}{}=\frac{2(x-3)(x-1)}{(x-4)(x+4)(x-2)},\ x\neq 4,-4,2$$

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You try

$$\frac{x-1}{2x^2+7x+6}+\frac{x-1}{x^2+6x+8}$$

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perform the indicated operation and simplify

$$\frac{2x-1}{2x^2-7x-4}-\frac{x-1}{2x^2+3x+1}$$

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You try

$$\frac{3x+4}{2x^2+x-6}-\frac{x-1}{x^2+4x+4}$$

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perform the indicated operation and simplify LCD: $(x+3)(x-3)$

$$\frac{6}{x^2-9}+\frac{x+1}{x+3}-\frac{x-2}{x-3}$$

$$\frac{6+x^2-2x-3-x^2-x+6}{(x-3)(x+3)}$$

$$\frac{-3x+9}{(x-3)(x+3)}=\frac{-3(x-3)}{(x-3)(x+3)}=-\frac{3}{(x+3)} \quad x\neq 3,-3$$

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You try

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

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$x^2 + 4xy + 3y^2$

$(x+3y)(x+y)$

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