Key

Math 4

Name _____

Date _____

3-4 and 3-5 Learn Check

In this Learning Check, you are being assessed on the following learning goals:
I can manipulate rational expressions into useful equivalent forms by simplifying, adding, subtracting, multiplying, and dividing.

Perform the following operations on the given rational expressions.

1. $\dfrac{(x+2)^2}{x-3} \cdot \dfrac{x-3}{x^2+3x+2}$

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

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

2. $\dfrac{2}{x^2+4x+3} + \dfrac{x}{x+1} \cdot \dfrac{(x+3)}{(x+3)}$

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

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

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

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

3. $\dfrac{3-2x}{2x^2+5x-12} - \dfrac{2}{x+4} \cdot \dfrac{2x-3}{2x-3}$

$(2x-3)(x+4)$

$= \dfrac{3-2x}{(2x-3)(x+4)} - \dfrac{(4x-6)}{(2x-3)(x+4)}$

$= \dfrac{9-6x}{(2x-3)(x+4)}$

$= \dfrac{3(3-2x)}{(2x-3)(x+4)} = \dfrac{-3(-3+2x)}{(2x-3)(x+4)} = \dfrac{-3(2x-3)}{(2x-3)(x+4)} = \boxed{\dfrac{-3}{x+4}}$

4. $\dfrac{x^2+4x+4}{x+3} \div \dfrac{6x+12}{3x^2+15x+18}$

$3(x^2+5x+6)$

$\dfrac{(x+2)(x+2)}{x+3} \cdot \dfrac{3(x+2)(x+3)}{6(x+2)}$

$= \boxed{\dfrac{(x+2)^2}{2}}$

OVER →

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

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

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

$= \frac{4x-8}{(x+2)(x-2)}$

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

$= \boxed{\frac{4}{x+2}}$