Rational Expressions Homework – Homework: Rational Expressions and Equations*

Kenny M. Felder

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Abstract

Homework exercises on rational expressions and equations.

Exercise 1

$\frac{3x^2+5x-8}{6x+16} \times \frac{4x^3+x}{3x^3-3x}$

a. Simplify
b. What values of x are not allowed in the original expression?
c. What values of x are not allowed in your simplified expression?

Exercise 2

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

a. Simplify
b. What values of x are not allowed in the original expression?
c. What values of x are not allowed in your simplified expression?

Exercise 3

$\frac{\frac{x^2+9}{x^2-4}}{\frac{x^2+7x+12}{x^2+2x-8}}$

a. Simplify
b. What values of x are not allowed in the original expression?
c. What values of x are not allowed in your simplified expression?
d. Test your answer by choosing an x value and plugging it into the original expression, and your simplified expression. Do they yield the same answer?

Exercise 4

$\frac{x}{x^2-25}+$ <**something**> $= \frac{x^2+1}{x^3-9x^2+20x}$

a. What is the something?

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b. What values of x are not allowed in the original expression?
c. What values of x are not allowed in your simplified expression?

Exercise 5
$\frac{x-6}{x-3} = \frac{x+18}{2x+7}$

a. Solve for x. You should get two answers.
b. Check by plugging one of your answers back into the original equation.

Exercise 6
If $f(x) = \frac{1}{x}$, find $\frac{f(x+h)-f(x)}{h}$.

NOTE: The first item, $f(x+h)$, is a composite function!

Simplify as much as possible.