

For all of the following questions, simplify and state restrictions.

Lesson 2.1: Functions and Equivalent Algebraic Expressions

a) $\frac{3x^2+5x-2}{7x^2+12x-4}$

b) $\frac{6x^2-13x+6}{8x^2-6x-9}$

c) $\frac{x^2+8x+16}{x^2-16}$

d) $\frac{5m^2-57mn+70n^2}{2m^2-16mn-40n^2}$

e) $\frac{xy+3x-2y-6}{y^2+y-6}$

Lesson 2.2A: Operations with Rational Expressions Multiplying and Dividing

a) $\frac{12x^2-19x+5}{4x^2-9} \div \frac{3x-1}{2x-3}$

b) $\frac{2x^2-5x-3}{2x^2-11x+15} \times \frac{4x^2-8x-5}{4x^2+4x+1}$

c) $\frac{x^2-25}{x^2-16} \div \frac{2x-10}{4x+16}$

d) $\frac{x^2+3xy}{x^2-xy-42y^2} \times \frac{x^2-10xy+21y^2}{x^2-9y^2}$

e) $\frac{12x^2-5x-2}{8x^2+2x-21} \div \frac{12x^2+x-6}{8x^2-2x-15}$

Lesson 2.2B: Operations with Rational Expressions Adding and Subtracting

a) $\frac{x^2+3x+1}{4x^2-9} - \frac{x^2-3x-1}{9-4x^2}$

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

c) $\frac{x^2+5x+6}{x^2-3x+2} \div \frac{x+3}{x-1} - \frac{6}{x+3}$

Solutions Lesson 2.1:

a) $\frac{3x-1}{7x-2}, x \neq -2, \frac{2}{7}$

b) $\frac{3x-2}{4x+3}, x \neq -\frac{3}{4}, \frac{3}{2}$

c) $\frac{x+4}{x-4}, x \neq \pm 4$

d) $\frac{5m-7n}{2(m+2n)}, m \neq -2n, 10n$

e) $\frac{x-2}{y-2}, y \neq -3, 2$

Solutions Lesson 2.2A:

a) $\frac{4x-5}{2x+3}, x \neq \pm \frac{3}{2}, \frac{1}{3}$

b) $1, x \neq -\frac{1}{2}, \frac{5}{2}, 3$

c) $\frac{2(x+5)}{x-4}, x \neq \pm 4, 5$

d) $\frac{x}{x+6y}, x \neq -6y, \pm 3y, 7y$

e) $\frac{(4x+1)(4x+5)}{(4x+7)(4x+3)}, x \neq -\frac{7}{4}, -\frac{5}{4}, -\frac{3}{4}, \frac{2}{3}, \frac{3}{2}$

Solutions Lesson 2.2B:

a) $\frac{3x^2}{(2x-3)(2x+3)}, x \neq \pm \frac{3}{2}$

b) $\frac{10x^2+3x}{(2x+1)(x+1)(3x+1)}, x \neq -1, -\frac{1}{2}, -\frac{1}{3}$

c) $\frac{x^2-x+18}{(x-2)(x+3)}, x \neq -3, 1, 2$