7.3 Multiply and Divide Rational Expressions

Simplify the following rational expressions.

a. $\dfrac{14x^5 - 22x^3 + 9x}{2x^2}$

b. $\dfrac{40x^3}{6y} \cdot \dfrac{15y^2}{5x^5}$

c. $\dfrac{a+5}{a-2} \cdot \dfrac{a-3}{a+4}$

Multiply the following rational expressions.

a. $\dfrac{(h+2)(h-8)}{(h-8)(h-6)} \cdot \dfrac{(h-6)(h+3)}{(h-2)(h-7)}$

Divide the following rational expressions.

b. $\dfrac{8}{15} \div \dfrac{4}{7}$

c. $\dfrac{d+3}{d-5} \div \dfrac{d+3}{d+8}$

Divide the following rational expressions.

c. $\dfrac{18x^2 + 9x - 20}{x^2 + 2x - 35} \div \dfrac{6x^2 + 13x - 15}{x^2 + 10x + 21}$

7.4 Add and Subtract Rational Expressions

Find the least common denominator for each of the following sets of fractions and rewrite each fraction in terms of the LCD.

a. $\dfrac{5}{6x^2}$ $\dfrac{4}{5x^5}$

b. $\dfrac{a+2}{a-5}$ $\dfrac{a-3}{a+7}$

Find the least common denominator for each of the following sets of fractions and rewrite each fraction in terms of the LCD.

a. $\dfrac{2x+5}{x^2+10x+25}$ $\dfrac{3x-4}{x^2+2x-15}$

Add the following rational expressions.

a. $\dfrac{8}{3a^2}+\dfrac{2}{7a}$

b. $\dfrac{h+6}{h+2}+\dfrac{h-5}{h+2}$

Add the following rational expressions.

c. $p+\dfrac{3}{p-5}$

Add the following rational expressions.

d. $\dfrac{a+2}{a^2+5a-6}+\dfrac{a-3}{a^2+8a+12}$

Subtract the following rational expressions.

a. $\frac{x^2+5x}{(x+3)(x+4)} - \frac{3x+8}{(x+3)(x+4)}$

b. $\frac{5x+2}{x^2-7x+12} - \frac{2x-7}{x^2+4x-21}$

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7.5 Solving Rational Equations

Steps:

1. State what values should be excluded
2. Multiply both sides of the equation by the Least Common Denominator (LCD) or cross multiply if possible
3. Solve the remaining equation
4. Check the answer(s) in the original equation. (Watch for division by zero).

Solve the following rational equation. Check your answer in the original equation.

a. $\frac{35}{x+3} = 5$

b. $\frac{8}{x+3} = 7 - \frac{6}{x+3}$

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Solve the following rational equations. Check your answer in the original equation.

c. $\frac{3}{a+2} + \frac{5a}{a-3} = \frac{75}{a^2-a-6}$

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