

MATH 1010 ~ Intermediate Algebra Chapter 6: RATIONAL EXPRESSIONS, EQUATIONS AND FUNCTIONS

Section 6.2: Multiplying and Dividing Rational Expressions

Objectives:

- ☆ Multiply rational expressions and simplify.
- ☆ Divide rational expressions and simplify.

$$\frac{2}{3x} * \frac{15}{7x}$$
$$\frac{3x}{24} \div \frac{15x}{8}$$

Multiply these. Simplify the answer.

a) $\frac{2x^4y^2}{3xy^3} \cdot \frac{-6xy^2}{14x^3}$

b) $\frac{5x^2 - 5x}{x^2 + 5x - 6} \cdot \frac{x^2 + 8x + 12}{10x}$

Divide these. Simplify the answer.

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

$$\text{b) } \frac{x^2 y^3}{3x^3} \div \frac{x^3 y}{2x + x^2}$$

① EXAMPLE

Fill in the missing factor.

$$\text{a) } \frac{14x(x-3)^2}{(x-3)(?) } = \frac{2x}{x-3}$$

$$\text{b) } \frac{(3x+5)(?)}{5x^2(3x-5)} = \frac{3x+5}{x}$$

② EXAMPLE

Simplify the answer to these.

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

b)
$$\frac{7x}{4x - 16} \div \frac{14x^2 + 21x}{2x^2 - 7x - 4}$$

c)
$$\frac{x + 3}{x^2 + 7x + 10} \div \frac{x^2 + 6x + 9}{x^2 + 5x + 6}$$

d)
$$\frac{y^2 - 100}{4y^2} \cdot \frac{y^3 - 5y^2 - 50y}{y^4 + 10y^3} \div \frac{(y - 10)^2}{5y}$$

$$\text{e) } \frac{\frac{5x}{x+7}}{\frac{10}{x^2+8x+7}}$$