# MULTIPLYING RATIONAL EXPRESSIONS

## SECTION 11.5

# How to multiply

Multiply the top (numerator)

Multiply the bottom (denominator)

Factor the top and bottom

Simplify

# Examples

1. $\frac{4x^2}{3x} \cdot \frac{2x}{6x^4}$ $\frac{8x^3}{18x^5}$

$\frac{4}{9x^2}$

2. $\frac{6x^2}{3x^5} \cdot \frac{12x}{3x^2} = \frac{72x^3}{9x^7} =$

$\frac{8}{x^4}$

# Examples

3. $\frac{3x}{4x-8} \cdot \frac{x^2-4}{x}$

$\frac{3x(x^2-4)}{x(4x-8)} = \frac{3x(x-2)(x+2)}{4x(x-2)}$

$\frac{3(x+2)}{4}$

4. $\frac{4x^2-8x}{12x} \cdot \frac{3x}{x-2}$

$= \frac{4x(x-2)}{12x(x-2)}$

$= \frac{3x(4x-8)(x)}{12x(x-2)}$

$\frac{12x^2(x-2)}{12x(x-2)} = x$

# Examples

5. $\dfrac{x}{x^2-5x+6} \cdot \dfrac{x^2-4}{x+2}$

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

$(x-2)(x-3)$

$\dfrac{x}{x-3}$

6. $\dfrac{x^2-9}{x^3-3x^3} \cdot \dfrac{3x^4}{x^2+6x+9}$

$(x+3)(x-3) \cdot 3x^4$

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

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

# DIVIDING RATIONAL EXPRESSIONS

## SECTION 11.5

# How to divide

Flip the second fraction

Make the division sign multiplication

Multiply the top (numerator)

Multiply the bottom (denominator)

Factor the top and bottom

Simplify

# Examples

1. $\frac{4x^2}{3x} \div \frac{2x^3}{6x^4}$

$\frac{4x^2}{3x} \cdot \frac{6x^4}{2x^3} = \frac{24x^6}{6x^4}$

$\boxed{4x^2}$

2. $\frac{6x^2}{3x^5} \div \frac{12x^4}{3x^2}$

$\frac{6x^2}{3x^5} \cdot \frac{3x^2}{12x^4} = \frac{18x^4}{36x^9}$

$\boxed{\frac{1}{2x^5}}$

# Examples

3. $\dfrac{3x^2-12}{x^5} \div \dfrac{4x-8}{x^2}$

4. $\dfrac{4x^2-12x}{12x} \div \dfrac{x-3}{3x}$

$\dfrac{3x^2-12}{x^5} \cdot \dfrac{x^2}{4x-8} = \dfrac{x^2(3x^2-12)}{x^5(4x-8)}$ $3(x^2-4)$

$\dfrac{3x^2(x-2)(x+2)}{4x^5(x-2)} = \boxed{\dfrac{3(x+2)}{4x^3}}$

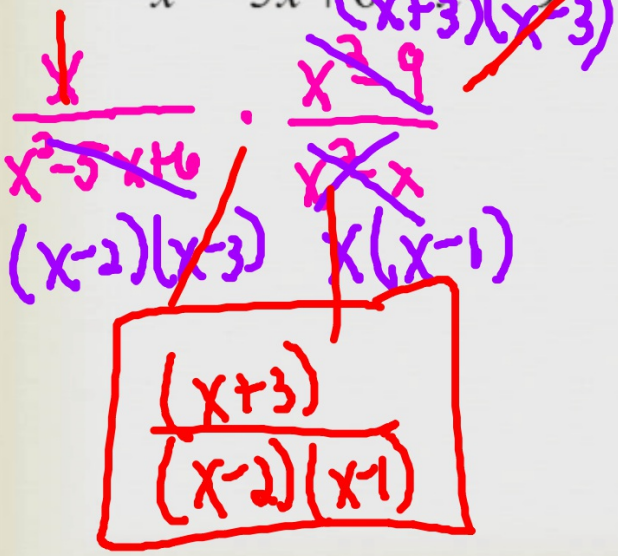
$\dfrac{4x(x-3)}{12x} \cdot \dfrac{3x}{x-3}$

$\dfrac{12x^2(x-3)}{12x(x-3)} = \boxed{x}$

# Examples

5. $\dfrac{x}{x^2-5x+6} \div \dfrac{x^2-x}{x^2-9}$

6. $\dfrac{\dfrac{3x+12}{x}}{\dfrac{x+4}{4x}}$



# Classwork

Pg 673 # 4-11

# Homework

Pg 673 # 13-31 odd