W↑

Simplify the expressions (Hint: factor on top and bottom first):

- $\frac{2x-6}{x^2-x-6}$

- $\frac{x^2+2x}{12x^2-12x}$

Multiplying Rational Expressions

Section 11.5

Steps to Follow

1. Make sure everything is factored
   - Every numerator and every denominator
2. Cancel out common factors if possible
3. Multiply the numerators
4. Multiply the denominators
5. Make sure your answer is completely simplified

Examples

- $\frac{3x^3}{4x} \cdot \frac{8x^2}{15x^4}$

- $\frac{7n^5}{5n^2} \cdot \frac{10n^3}{14n}$

Examples (cont'd)

- $\frac{x}{3x^2-9x} \cdot \frac{x-3}{2x^2+x-3}$

- $\frac{y-5}{3y-y^2} \cdot \frac{2y^2}{y^2-6y+5}$

Examples (cont'd)

- $\frac{7x}{x^2+5x+4} \cdot (x+4)$

- $(2x-3) \cdot \frac{2x+1}{2x^2-x-3}$

On your own…

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

2. $\frac{3x}{x^2-2x-15} \cdot (x+3)$

3. $\frac{x}{x^2-25} \cdot \frac{x-5}{x+5}$

4. $\frac{x^2-1}{x} \cdot \frac{2x}{3x-3}$

Classwork

- Textbook page 673
- Numbers 12 – 14
  18 – 20
  26 – 28

Divide the fractions

- $\frac{2}{3} \div \frac{10}{11}$
- $\frac{8}{9} \div \frac{14}{15}$

Dividing Rational Expressions

Section 11.5

Steps to Follow

1. To divide, multiply by the **reciprocal**
   - Don't change the first terms
   - Flip the second term

2. Then, follow the multiplication steps

Examples

- $\frac{4n}{n+5} \div \frac{n-9}{n+5}$

- $\frac{n-2}{2n} \div \frac{n-2}{n+5}$

Examples (cont'd)

- $\frac{x^2-9}{4x^2} \div (x-3)$

- $\frac{5x^2-20x}{x+5} \div (x-4)$

Examples (cont'd)

- $\frac{x^2-x-2}{3x-3} \div (x^2 - 1)$

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

Example

$$\frac{\frac{3x+12}{x}}{\frac{x+4}{4x}}$$

Practice Problems

- #7-11
- #21-23