Chapter 11-5 Dividing Rational Expression Notes

Things to consider:

- can not divide expressions, must multiply by the reciprocal
- look to simplify by canceling
- remember to use the integer and exponent rules
- may have to factor out a variable, number, or an expression (parentheses)
- multiply numerators together then denominators together

Simplify

1. $\dfrac{10x^4}{7} \div \dfrac{35x}{14x^2}$

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Multiply by the reciprocal; simplify the numbers and the variables.

$$\dfrac{\overset{2}{\cancel{10}}x^4}{\underset{1}{\cancel{7}}} \cdot \dfrac{\overset{2}{\cancel{14}}x^2}{\underset{7}{\cancel{35}x}} = \dfrac{4x^{\overset{5}{\cancel{1}}}}{7\cancel{x}} = \dfrac{4x^5}{7}$$

Simplify

2. $\dfrac{x}{8 - 2x} \div \dfrac{2x}{4 - x}$

Simplify

2. $\dfrac{x}{8-2x} \div \dfrac{2x}{4-x}$

Multiply by the reciprocal;
Factor out a 2
Simplify

$$\dfrac{x}{8-2x} \cdot \dfrac{4-x}{2x}$$

$$\dfrac{x}{2(4-x)} \cdot \dfrac{4-x}{2x} = \dfrac{x}{4x} = \dfrac{1}{4}$$

Simplify

3. $$\dfrac{4x^2 - 25}{4x} \div 2x - 5$$

Simplify

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$$\frac{4x^2 - 25}{4x} \div 2x - 5$$

Multiply by the reciprocal;
Factor numerator as a difference
of two squares
Simplify

$$\frac{4x^2 - 25}{4x} \cdot \frac{1}{2x - 5}$$

$$\frac{(2x - 5)(2x + 5)}{4x} \cdot \frac{1}{2x - 5} = \frac{2x + 5}{4x}$$

Simplify

4. $$\frac{9x^2 + 6x + 1}{x + 5} \div \frac{3x + 1}{x^2 + 5x}$$

Simplify

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$\dfrac{9x^2 + 6x + 1}{x + 5} \cdot \dfrac{x^2 + 5x}{3x + 1}$

$\dfrac{(3x+1)(3x+1)}{x+5} \cdot \dfrac{x(x+5)}{3x+1}$

$\dfrac{x(3x+1)}{1}$ or $\dfrac{3x^2 + 1x}{1}$

Box Method

$AC = 9$

b factors $3, 3$

	$3x$	1
$3x$	$9x^2$	$3x$
1	$3x$	1