

9.4 Simplifying Rational Expressions Part I

Rational Expressions

SIMPLIFY:

1) $\frac{\cancel{2} + 3}{\cancel{2} + 4} = \frac{3}{4}$

$$\frac{5}{6}$$

Pull

Rational Expressions

SIMPLIFY:

$$2) \quad \frac{27x^9}{39x^{14}}$$

Pull

B4U cancel,
STATE RESTRICTIONS

Restriction

$$x \neq 0$$

$$\frac{9}{13x^5}, x \neq 0$$

Pull

Cancel

$$\frac{27 \div 3}{39 \div 3} = \frac{9}{13}$$

$$\frac{x^9}{x^{14}} = x^{-5} = \frac{1}{x^5}$$

Rational Expressions

SIMPLIFY:

$$3) \frac{6x^2 + 9x}{3x}$$

① Factor

$$\frac{\cancel{3x} \cdot (2x + 3)}{\cancel{3x}}$$

② Restrictions

$$x \neq 0$$

$$3x = 0$$

$$x \neq 0$$

③ Cancel

$$2x + 3, x \neq 0$$

Pull

Pull

Pull

Rational Expressions

SIMPLIFY:

$$4) \frac{x^2 + 2x - 3}{x^2 + 7x + 12}$$

① Factor

$$\frac{(x-1)\cancel{(x+3)}}{\cancel{(x+3)}(x+4)}$$

Restrictions

$$(x+3)(x+4) = 0$$

$$x+3=0 \quad x+4=0$$

$$x \neq -3 \quad x \neq -4$$

③ Cancel

$$\frac{(x-1)}{(x+4)} \quad \begin{array}{l} x \neq -3 \\ x \neq -4 \end{array}$$

Pull

Pull

Pull

Rational Expressions

SIMPLIFY:

$$5) \frac{2x-6}{9-x^2} = \frac{2x-6}{-x^2+9} = \frac{2x-6}{-(x^2-9)}$$

① Factor

$$\frac{2(\cancel{x-3})}{-(\cancel{x-3})(x+3)}$$

$$\begin{array}{r} -9 \\ -3 \times 3 \\ 0 \end{array}$$

② Restrictions

$$x \neq -3, 3$$

③ Cancel

$$-\frac{2}{(x+3)}, x \neq \pm 3$$

Pull

Pull

Pull

HOMEWORK 9.4 (part I):

P. 511 #1- 6, 19-21, 42, 43, 51-54