Mathematics 11U

2.4 – Simplifying Rational Expressions

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$$\frac{3}{12} = \frac{3}{3(4)} = \frac{1}{4}$$

$$\frac{15p^{3}}{10p^{2}}$$

$= \frac{3p}{2} \quad \{p \neq 0\}$

$$\frac{x+1}{4x^2+4x} = f(x)$$

1. Fully factor
2. simplify
3. state restrictions
   - from factored step

$$= \frac{(x+1)}{4x(x+1)}$$

$$= \frac{1}{4x} \quad \{x \neq -1, 0\}$$

$$\frac{x^2 + 11x + 28}{x^2 + 13x + 36}$$

(x) 29 (+) 11

(x) 36 (+) 13

$$= \frac{(x+4)(x+7)}{(x+9)(x+4)}$$

$$= \frac{x+7}{x+9} \quad \{x \neq -9, -4\}$$

$$\frac{35x^2 + 28x - 7}{21x^2 + 56x + 35}$$

$= \frac{7(5x^2 + 4x - 1)}{7(3x^2 + 8x + 5)}$ $\begin{matrix} (x)\ -5 \\ (+)\ 4 \end{matrix}$ $> 5, -1$; $\begin{matrix} (x)\ 15 \\ (+)\ 8 \end{matrix}$ $3, 5$

$= \frac{7(5x^2 + 5x - 1x - 1)}{7(3x^2 + 3x + 5x + 5)}$

$= \frac{7(5x-1)(x+1)}{7(3x+5)(x+1)} = \frac{5x-1}{3x+5}$ $\{x \neq -\frac{5}{3}, -1\}$

$-5/3$ $\quad -1$