12.4: Simplify Rational Expressions

Goals: *Identify excluded values of rational expressions
*Simplify rational expressions by factoring using the GCF
*Simplify rational expressions by factoring into two binomials

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Rational expression:

Excluded values:

Find excluded values for each rational expression:

Ex: $\frac{x+8}{10x}$

Ex: $\frac{5}{2y+14}$

Ex: $\frac{4v}{v^2-9}$

Ex: $\frac{7w+2}{8w^2+w+5}$

Ex: $\frac{x+2}{3x-5}$

Ex: $\frac{2}{5y^2+2y+3}$

Ex: $\frac{n-6}{2n^2-5n-12}$

Ex: $\frac{2m}{m^2-4}$

Simplest Form:

Simplify each rational expression and state the excluded values.

Ex: $\frac{r}{2r}$

Ex: $\frac{5x}{5(x+2)}$

Ex: $\frac{6m^3-12m^2}{18m^2}$

Ex: $\frac{y}{7-y}$

Ex: $\frac{4a^3}{22a^6}$

Ex: $\frac{2c}{c+5}$

Ex: $\frac{2s^2+8s}{3s+12}$

Ex: $\frac{8x}{8x^3+16x^2}$

Simplify by factoring into binomials and state excluded values:

Ex: $\frac{x^2-3x-10}{x^2+6x+8}$

Ex: $\frac{x^2+x-12}{x^2-x-6}$

Ex: $\frac{x^2+3x+2}{x^2+7x+10}$

Ex: $\frac{y^2-64}{y^2-16y+64}$

Recognize Opposites:

Ex: $\frac{x^2-7x+12}{16-x^2}$

Ex: $\frac{5+4z-z^2}{z^2-3z-10}$

Ex: $\frac{x^2-7x+10}{25-x^2}$