

Algebra II

5-7

Complex Fractions

Simplify. (pg 239)

$$\begin{aligned} 1) \frac{1 - \frac{1}{3}}{\frac{1}{2} - \frac{1}{6}} &= \left(1 - \frac{1}{3}\right) \div \left(\frac{1}{2} - \frac{1}{6}\right) \\ &= \frac{2}{3} \div \left(\frac{3}{6} - \frac{1}{6}\right) \\ &= \frac{2}{3} \div \frac{2}{6} \\ &= \frac{2}{3} \div \frac{1}{3} \\ &= \frac{2}{3} \cdot \frac{3}{1} \\ &= 2 \end{aligned}$$

$$11) \frac{\frac{1}{x^2} - \frac{1}{y^2}}{\frac{1}{x^2} + \frac{2}{xy} + \frac{1}{y^2}} = \left(\frac{\frac{y^2}{y^2 x^2} - \frac{1 x^2}{y^2 x^2} \right) \div \left(\frac{1 y^2}{y^2 x^2} + \frac{2 xy}{xy \cdot xy} + \frac{1 x^2}{y^2 x^2} \right)$$

$$\left(\frac{y^2 - x^2}{x^2 y^2} \right) \div \left(\frac{y^2 + 2xy + x^2}{x^2 y^2} \right)$$

$$\frac{(y^2 - x^2)}{\cancel{x^2 y^2}} \cdot \frac{\cancel{x^2 y^2}}{(y^2 + 2xy + x^2)}$$

Difference of Squares

$$\frac{\cancel{(y+x)}(y-x)}{\cancel{(y+x)}(y+x)} \leftarrow \text{Backwards FOIL}$$

$$\frac{y-x}{y+x}$$

$$19) \frac{\frac{1}{a+1} + \frac{1}{a-1}}{\frac{1}{a+1} - \frac{1}{a-1}} = \left(\frac{1}{a+1} + \frac{1}{a-1} \right) \div \left(\frac{1}{a+1} - \frac{1}{a-1} \right)$$

$$\left(\frac{1(a-1) + 1(a+1)}{(a+1)(a-1)} \right) \div \left(\frac{1(a-1) - 1(a+1)}{(a+1)(a-1)} \right)$$

$$\frac{2a}{\cancel{(a+1)(a-1)}} \cdot \frac{\cancel{(a+1)(a-1)}}{(a-1-a-1)}$$

$$\frac{2a}{-2}$$

$$-a$$

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