

$$75. \quad \frac{6x^2}{x^2-9} \cdot \frac{3x^2+x-24}{20y-6xy} \cdot \frac{x-3}{3x-8} \div \frac{3x^2+9x}{3x^2-x-30}$$

$$\frac{6x^2}{(x+3)(x-3)} \cdot \frac{(3x-8)(x+3)}{2y(10-3x)} \cdot \frac{x-3}{3x-8} \cdot \frac{(x+3)(3x-10)}{3x(x+3)}$$

$\begin{array}{l} \overbrace{3x^2+x-24}^{-72} \\ \underline{3x^2 - 8x + 9x - 24} \quad 8,9 \\ x(3x-8) + 3(3x-8) \\ (3x-8)(x+3) \end{array}$	$\begin{array}{l} \overbrace{3x^2-x-30}^{-90} \\ \underline{3x^2 + 9x - 10x - 30} \quad 9,10 \\ 3x(x+3) - 10(x+3) \\ (x+3)(3x-10) \end{array}$
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$$\frac{6x^2}{(x+3)(x-3)} \cdot \frac{\cancel{(3x-8)}\cancel{(x+3)}}{2y(10-3x)} \cdot \frac{\cancel{x-3}}{\cancel{3x-8}} \cdot \frac{\cancel{(x+3)}(3x-10)}{\cancel{3x}\cancel{(x+3)}}$$

$$\frac{x \overset{-1}{\cancel{(3x-10)}}}{y \cancel{(10-3x)}}$$

$$\begin{aligned} 3x-10 &= (-1)(-3x+10) \\ &= (-1)(10-3x) \end{aligned}$$

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

$$56. \frac{t^2 - 2t}{2t} \cdot \frac{2}{t} \cdot \frac{2t}{t^2 - 4t + 4} \div \frac{t + 2}{t - 2}$$

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

$$\frac{2}{t+2}$$

7.3 Adding and Subtracting Rational Expressions with the Same Denominator

$$6. \quad \frac{2x}{9} + \frac{x}{9} = \frac{3x}{9} = \frac{x}{3}$$

$$12. \quad \frac{16x + y}{x - y} + \frac{10x - 15y}{x - y} = \frac{26x - 14y}{x - y}$$

$$15. \frac{m+3}{m^2-1} - \frac{4}{m^2-1}$$

$$\frac{m-1}{m^2-1} = \frac{\cancel{m-1}}{(m+1)\cancel{(m-1)}} = \frac{1}{m+1}$$

$$36. \frac{2m^2-6m}{m^2-5m+6} + \frac{2m-4}{m^2-5m+6} + \frac{4}{m^2-5m+6}$$

$$\frac{2m^2-4m}{m^2-5m+6} = \frac{2m\cancel{(m-2)}}{\cancel{(m-2)}(m-3)} = \frac{2m}{m-3}$$

$$30. \frac{s^2 + 2s}{s^2 + 4s + 4} - \frac{s^2 + s - 2}{s^2 + 4s + 4}$$

7.4 Adding and Subtracting Rational Expressions with the Different Denominator

$$20. \frac{2(3x - y)}{2(6)} - \frac{(3x - 2y)3}{(4)3}$$

$$\frac{6x - 2y}{12} - \frac{9x - 6y}{12} = \frac{6x - 2y - 9x + 6y}{12}$$

$$\frac{-3x + 4y}{12}$$

$$26. \frac{5m}{m^2 - mn} + \frac{3}{m} \quad m(m-n)$$

$$\frac{5m}{m(m-n)} + \frac{3(m-n)}{m(m-n)}$$

$$\frac{5m + 3m - 3n}{m(m-n)} = \frac{8m - 3n}{m(m-n)}$$

$$28. \frac{2(c+3)}{(c+4)(c+3)} + \frac{3(c+4)}{(c+3)(c+4)} \quad (c+4)(c+3)$$

$$\frac{2(c+3) + 3(c+4)}{(c+4)(c+3)} = \frac{2c+6 + 3c+12}{(c+4)(c+3)}$$

$$= \frac{5c+18}{(c+4)(c+3)}$$

$$32. \frac{a+6}{a^2+8a+15} - \frac{a-3}{a+3}$$

$$38. \frac{x}{x-7} - \frac{x+3}{x^2-4x-21}$$

$$44. \frac{u}{u-1} + \frac{2u}{u^2-2u+1}$$

$$50. \frac{x+1}{x^2-4x+4} + \frac{4}{x^2+3x-10}$$

$$56. \frac{m^2}{m^2-m+1} - \frac{m+1}{m}$$

7.5 Complex Rational Expressions

$$8. \frac{\frac{2}{3}}{\frac{3}{2}}$$

$$12. \frac{\frac{2}{3} + \frac{1}{4}}{1 + \frac{1}{2}}$$

$$16. \frac{\frac{5}{2x-1}}{\frac{x}{x+1}}$$

$$20. \frac{\frac{a}{b} - 1}{a^2 - b^2}$$

$$24. \frac{x - \frac{1}{x}}{1 + \frac{1}{x}}$$

$$28. \frac{\frac{k+2}{k^2-3k}}{\frac{k^2-4}{k}}$$

$$34. \frac{\frac{1}{f+2} - \frac{1}{f-3}}{1 + \frac{1}{f^2 - f - 6}}$$

$$36. \frac{1 - \frac{3}{x}}{1 - \frac{2}{x} - \frac{3}{x^2}}$$

$$38. \frac{\frac{v^2 + v - 2}{v^2 + 4v}}{\frac{2v^2 - 8}{v^2 + 2v - 8}}$$

$$44. \frac{1 - \frac{1}{u^2}}{1 + \frac{2}{u} + \frac{1}{u^2}}$$

