

$$\frac{4-3x}{3x-4}$$

$$3x-4$$

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

$$\cancel{3x-4}$$

$$-1$$

$$4-3x = -1(-4+3x)$$

## 7.2 Multiplying and Dividing Rational Expressions

$$8. \frac{x}{y} \cdot \frac{3x}{2y} = \frac{3x^2}{2y^2}$$

$$12. \frac{\overset{1}{\cancel{7}} m \overset{2}{\cancel{n^2}}}{\underset{1}{\cancel{8} m^2} n} \cdot \frac{\overset{2}{\cancel{16} m} \cancel{z^2}}{\underset{7}{\cancel{49} n^2} z}$$

$$\frac{2 \cancel{m^2} \cancel{z^2}}{7 \cancel{m^2} n \cancel{z}}$$

$$\frac{2z}{7n}$$

$$16. \frac{\cancel{9}^3}{2a+4} \cdot \frac{3a+6}{\cancel{15}_5}$$

$$\frac{3 \cdot \cancel{3}(a+2)}{2(\cancel{a+2})_5} = \frac{9}{10}$$

$$18. \frac{m^2 + 5m}{m^2 - 16} \cdot \frac{m^2 - 4m}{m^2 - 25}$$

$$\frac{m(\cancel{m+5})}{(m+4)(\cancel{m-4})} \cdot \frac{m(\cancel{m-4})}{(\cancel{m+5})(m-5)}$$

$$\frac{m^2}{(m+4)(m-5)}$$

$$28. \frac{2m - 3n}{m^2 + 4mn + 4n^2} \cdot \frac{5m^2 + 10mn}{3mn - 3n^2} \cdot \frac{4m^2 - 4n^2}{4m^2 - 9n^2}$$

$$\frac{\cancel{2m - 3n}}{(m + 2n)(\cancel{m + 2n})} \cdot \frac{\cancel{5m(m + 2n)}}{3n(m - n)} \cdot \frac{(2m + 2n)(2m - 2n)}{(2m + 3n)(\cancel{2m - 3n})}$$

$$\frac{5m(2m + 2n)(2m - 2n)}{(m + 2n)3n(m - n)(2m + 3n)}$$

$$\frac{20m(m + n)(\cancel{m - n})}{(m + 2n)3n(\cancel{m - n})(2m + 3n)}$$

$$\frac{20m(m + n)}{3n(m + 2n)(2m + 3n)}$$

$$30. \frac{x}{2} \div \frac{x}{4} = \frac{\overset{1}{\cancel{x}}}{\underset{1}{\cancel{2}}} \cdot \frac{\overset{2}{\cancel{4}}}{\cancel{x}} = \frac{2}{1} = 2$$

$$34. \frac{7a^2b}{2c^2} \div \frac{7a^2}{b}$$

$$\frac{\overset{1}{\cancel{7a^2}}b}{2c^2} \cdot \frac{b}{\underset{1}{\cancel{7a^2}}} = \frac{b^2}{2c^2}$$

$$38. \frac{a^2 - b^2}{x^2 - y^2} \div \frac{a + b}{x - y}$$

$$\frac{\overbrace{(a+b)}^{|} \cancel{(a+b)} (a-b)}{(x+y) \cancel{(x-y)}^{|}} \cdot \frac{\cancel{x-y}^{|}}{\cancel{a+b}^{|}} = \frac{a-b}{x+y}$$

$$42. \frac{3a + 6}{5} \div \frac{4a + 8}{10a}$$

$$46. \frac{3w^2 - 7w - 6}{w^2 - 9} \div \frac{9w^2 - 4}{3w^2 + 7w - 6}$$

$$50. \frac{u^2 - 2u - 8}{u^2 + 3u + 2} \div (u^2 - 3u - 4)$$

$$54. \frac{12h^2 + 11h - 5}{h^4 - 16} \div \frac{h - 3h^2}{h^3 + 4h - 2h^2 - 8} \div \frac{4h + 5}{h^3}$$

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

### 7.3 Adding and Subtracting Rational Expressions with the Same Denominator

$$6. \frac{2x}{9} + \frac{x}{9}$$

$$12. \frac{16x + y}{x - y} + \frac{10x - 15y}{x - y}$$

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

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

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

## 7.4 Adding and Subtracting Rational Expressions with the Different Denominator

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

$$26. \frac{5m}{m^2-mn} + \frac{3}{m}$$

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

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

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

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

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

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

## 7.5 Complex Rational Expressions

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

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

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

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

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

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

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

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

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

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

