

$$\frac{3x^2 + 16x - 35}{5x^2 + 33x - 14} = \frac{(3x-5) \cancel{(x+7)}}{\cancel{(x+7)} (5x-2)}$$

$$3x^2 + 16x - 35$$

$$-105$$

$$3x-5$$

$$3, 35$$

$$5x-2$$

$$3x^2 - 5x + 21x - 35$$

$$5, 21$$

$$x(3x-5) + 7(3x-5)$$

$$(3x-5)(x+7)$$


---

$$\frac{x^2 - 4}{x + 3}$$

Evaluate when  $x = -4.2$

$$\frac{(-4.2)^2 - 4}{-4.2 + 3} =$$

$$\begin{array}{r} 4.2 \\ 4.2 \\ \hline \end{array}$$

$$\begin{array}{r} 17.64 - 4 \\ \hline -1.2 \end{array}$$

$$\begin{array}{r} 4.2 \\ -3 \\ \hline 1.2 \end{array}$$

$$\begin{array}{r} 84 \\ 168 \\ \hline 17.64 \end{array}$$

$$\begin{array}{r} 13.64 \\ -1.2 \\ \hline \end{array} = \begin{array}{r} 136.4 \\ -12 \\ \hline \end{array}$$

$$\begin{array}{r} 11.3\bar{6} \\ 12 \overline{) 136.4} \\ \underline{12} \phantom{.4} \\ 16 \phantom{.4} \\ \underline{12} \phantom{.4} \\ 4.4 \\ \underline{36} \\ 80 \\ \underline{72} \\ 8 \end{array}$$

$$= -11.3\bar{6}$$

$$38. \frac{12y + 2}{18y + 3} = \frac{2 \cancel{(6y + 1)}}{3 \cancel{(6y + 1)}} = \frac{2}{3}$$

$$42. \frac{ab - b^2}{2a - 2b} = \frac{b \cancel{(a - b)}}{2 \cancel{(a - b)}} = \frac{b}{2}$$

$$46. \frac{x^2 - 16}{x^2 + 6x + 8} = \frac{\cancel{(x + 4)}(x - 4)}{(x + 2)\cancel{(x + 4)}} = \frac{x - 4}{x + 2}$$

$$50. \frac{3x^2 + 16x - 35}{5x^2 + 33x - 14}$$

$$66. \frac{2y^2 - 8}{2 - y} = \frac{2(y^2 - 4)}{2 - y} = \frac{2(y+2)(y-2)}{2 - y}$$

$$= \frac{2(y+2)(-1)(-y+2)}{2 - y}$$

$$= \frac{-2(y+2)\cancel{(2-y)}}{\cancel{2-y}} = -2(y+2)$$

$$70. \frac{12 - 4m}{m - 3}$$

$$\frac{4(3-m)}{m-3} = \frac{4(-1)(-3+m)}{m-3}$$

$$= \frac{-4 \cancel{(m-3)}}{\cancel{m-3}}$$

$$= -4$$

## 7.2 Multiplying and Dividing Rational Expressions

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

$$12. \frac{7mn^2}{8m^2n} \cdot \frac{16mz^2}{49n^2z}$$

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

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

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

$$30. \frac{x}{2} \div \frac{x}{4}$$

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

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

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

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

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

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

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

### 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

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

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

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

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

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

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

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

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

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

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

