

7.3: Adding and Subtracting Rational Expressions with Common Denominators and Least Common Denominator

EX:
$$\frac{2}{7} + \frac{3}{7} = \frac{2+3}{7} = \frac{5}{7}$$

2.
$$\frac{x+1}{7} + \frac{6}{7} = \frac{x+1+6}{7} = \frac{x+7}{7}$$

4.
$$\frac{3p}{2q} + \frac{11p}{2q} = \frac{3p+11p}{2q} = \frac{14p}{2q} = \frac{7p}{q}$$

6.
$$\frac{8y}{y-2} - \frac{16}{y-2}$$

$$= \frac{8y-16}{y-2} = \frac{\cancel{8}(y-2)}{\cancel{y-2}}$$

$$= 8$$

Ex: (p 449)

$$10. \frac{x^2 + 9x}{x + 7} - \frac{4x + 14}{x + 7}$$

$$\frac{(x^2 + 9x) - (4x + 14)}{x + 7}$$

$$\frac{x^2 + 9x - 4x - 14}{x + 7}$$

$$\frac{x^2 + 5x - 14}{x + 7}$$

$$\frac{(x - 2)(\cancel{x + 7})}{\cancel{x + 7}}$$

$$x - 2$$

$$12. \frac{3y}{y^2 + 3y - 10} - \frac{6}{y^2 + 3y - 10}$$

$$\frac{3y-6}{y^2+3y-10} = \frac{3(y-2)}{(y-2)(y+5)} = \frac{3}{y+5}$$

$$18. \frac{6x^2}{2x-5} - \frac{25+2x^2}{2x-5} \quad \frac{6x^2 - (25+2x^2)}{2x-5}$$

$$\frac{6x^2 - 25 - 2x^2}{2x-5}$$

$$\frac{4x^2 - 25}{2x-5}$$

$$\frac{(2x+5)(2x-5)}{2x-5}$$

$$2x+5$$

7.4: Adding and Subtracting Rational Expressions with Unlike Denominators

Ex: $\frac{3 \cdot 3}{3 \cdot 4} - \frac{2 \cdot 4}{3 \cdot 4}$

$$\frac{9 - 8}{12}$$

$$\frac{1}{12}$$

Ex: (p 455)

$$2. \frac{6 \cdot 15}{6 \cdot 7a} + \frac{8 \cdot 7}{6a \cdot 7} = \frac{90 + 56}{42a} = \frac{146}{42a} = \frac{73}{21a}$$

$$4. \frac{5 \cdot 4c}{5d} - \frac{8dd}{5d} = \frac{20c - 8d^2}{5d}$$

$$10. \frac{5}{x-4} + \frac{4x}{x^2-16} = \frac{5(x+4)}{(x-4)(x+4)} + \frac{4x}{(x+4)(x-4)}$$

$$\frac{5(x+4) + 4x}{(x+4)(x-4)} = \frac{5x + 20 + 4x}{(x+4)(x-4)}$$

$$= \frac{9x + 20}{(x+4)(x-4)}$$

$$12. \frac{5(2y+1)}{y^2} - \frac{yy^2}{(2y+1)y^2}$$

$$\frac{5(2y+1) - y \cdot y^2}{(2y+1)y^2} = \frac{10y + 5 - y^3}{(2y+1)y^2}$$

$$14. \frac{15}{y-4} + \frac{(20)(-1)}{(4-y)(-1)}$$

$$\frac{15}{y-4} + \frac{-20}{y-4} = \frac{-5}{y-4}$$

$$16. \frac{5}{a-7} + \frac{5(-1)}{(7-a)(-1)} = \frac{5}{a-7} + \frac{-5}{a-7}$$

$$= 0$$

18. $\frac{-9}{25x^2 - 1} + \frac{7}{1 - 25x^2}$

$$20. \frac{7}{x^2} - 5x$$

$$24. \frac{7}{2x-3} - 3$$

$$30. \frac{5x}{6} + \frac{11x^2}{2}$$

$$32. \frac{5x}{(x-2)^2} - \frac{3}{x-2}$$

$$36. \frac{6}{x} - 1$$

$$40. \frac{10}{3n-4} - \frac{5}{4-3n}$$

$$42. \frac{5}{(x+1)(x+5)} - \frac{2}{(x+5)^2}$$

$$44. \frac{x}{x^2-4} - \frac{5}{x^2-4x+4}$$

$$50. \frac{-1}{a-2} + \frac{4}{4-2a}$$

$$54. \frac{-7}{y^2-3y+2} - \frac{2}{y-1}$$

$$58. \frac{x+4}{x^2+12x+20} + \frac{x+1}{x^2+8x-20}$$

7.8: Simplifying Complex Fractions

Ex: (492)

$$2. \frac{\frac{1}{8}}{-\frac{5}{12}}$$

$$8. \frac{\frac{3}{4} - \frac{1}{2}}{\frac{3}{8} + \frac{1}{6}}$$

$$12. \frac{\frac{7}{10} - \frac{3}{5}}{\frac{1}{2}}$$

$$18. \frac{\frac{x}{2} + 2}{\frac{x}{2} - 2}$$

$$22. \frac{x - \frac{1}{2x+1}}{1 - \frac{x}{2x+1}}$$

$$28. \frac{3}{1 - \frac{4}{3}}$$

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

$$34. \frac{2 + \frac{6}{x}}{1 - \frac{9}{x^2}}$$

$$38. \frac{\frac{2}{x} + \frac{x}{2}}{\frac{2}{x} - \frac{x}{2}}$$

$$40. \frac{\frac{4}{x} + \frac{x}{x+1}}{\frac{1}{2x} + \frac{1}{x+6}}$$

