

tion, and simplify.

3. $\frac{x-3}{3} - \frac{x-4}{4}$
5. $\frac{1}{x+1} + \frac{1}{x-1}$
7. $\frac{6}{2x-3y} - \frac{3}{3y-2x}$
9. $\frac{2x-1}{x+1} - \frac{2x-1}{x-1}$
11. $\frac{a-b}{c-d} - \frac{b-a}{d-c}$
13. $\frac{1}{x-y} + \frac{2x-y}{x^2-y^2}$
15. $\frac{1}{y-x} + \frac{x}{(x-y)^2}$
17. $\frac{1}{1-2x} - \frac{2}{1-4x^2}$
19. $\frac{3}{1-x} + \frac{4}{(1-x)^2}$
21. $\frac{2}{x-4} - \frac{x+12}{x^2-16}$
23. $\frac{x-y}{x^2-y^2} + \frac{1}{2x+3y}$
24. $\frac{x^2+5x+4}{x+4} - \frac{x^2-5x+6}{x-2}$
25. $\frac{1}{x-2y} - \frac{x^2+4y^2}{x^3-8y^3}$
27. $x+2 - \frac{x^2+x-6}{x-3}$
29. $\frac{x+a}{x-a} - \frac{x^2+a^2}{ax-a^2}$
31. $\frac{1}{x+1} - \left(\frac{1}{x-1} - \frac{1}{x^2-1} \right)$
33. $\frac{1}{x-1} + \frac{2}{x-2} + \frac{1}{x-3}$
34. $\frac{a}{a^2-b^2} - \frac{1}{3(a-b)} - \frac{1}{3(a+b)}$
35. $\frac{1}{x+y} - \frac{1}{x-y} + \frac{2x}{x^2-y^2}$
36. $\frac{3}{x+6} - \frac{4x}{x^2-36} - \frac{2}{6-x}$
37. $\frac{3}{x^2+x-2} - \frac{5}{x^2-x-6}$
38. $\frac{1}{x^2-3x-4} - \frac{5}{x^2-x-2}$
39. $\frac{3x+13}{x^2-3x-10} - \frac{16}{x^2-6x+5}$
40. $\frac{6}{x^2-7x+12} + \frac{5x+9}{x^2-2x-3}$
41. $\frac{x-2}{x^2-x-2} + \frac{x-4}{x^2-5x+4}$
42. $\frac{x+4}{x^2-3x-28} - \frac{x-5}{x^2+2x-35}$

Solutions

For Problems 3 through 42, the original expression has been omitted.

3. $\frac{4x-12-3x+12}{12} = \frac{x}{12}$
4. $\frac{2x-1-2x+4}{3} = 1$
5. $\frac{-1+x+1}{x+1(x-1)} = \frac{2x}{x^2-1}$
6. $\frac{3+(-1)}{x-1} = \frac{2}{x-1}$
7. $\frac{(-3)}{3y} = \frac{9}{2x-3y}$
8. $\frac{x(x-y)+y(x+y)}{(x+y)(x-y)} = \frac{x^2+y^2}{x^2-y^2}$
9. $\frac{(-1)(x-1)-(2x-1)(x+1)}{(x+1)(x-1)} = \frac{2-4x}{x^2-1}$
10. $\frac{x^2+9-(x^2-6x+9)}{(x-3)(x+3)} = \frac{12x}{x^2-9}$
11. $\frac{a-b-(b-a)}{c+d} = 0$
12. $\frac{10+(-9)}{6(a-b)} = \frac{1}{6(a-b)}$
13. $\frac{x+y-y}{(x+y)(x-y)} = \frac{3x}{x^2-y^2}$
14. $\frac{x+(-y)}{(x+y)(x-y)} = \frac{1}{x+y}$
15. $\frac{x+y-x}{(x-y)^2} = \frac{y}{(x-y)^2}$
16. $\frac{4x-4(x+y)}{(x+y)^2} = -\frac{4y}{(x+y)^2}$
17. $\frac{2x-2}{(1-2x)(1+2x)} = -\frac{1}{1+2x}$
18. $\frac{3a+2b(3a-5)}{9a^2-4b^2} = \frac{2b}{9a^2-4b^2}$
19. $\frac{3-4}{(1-3x)^2} = \frac{3x}{(x-2y)^2}$
20. $\frac{2y+x-2y}{(x-2y)^2} = \frac{x}{(x-2y)^2}$
21. $\frac{2x+8-(x+12)}{(x+4)(x-4)} = \frac{1}{x+4}$
22. $\frac{3x-15-(2x-20)}{(x+5)(x-5)} = \frac{1}{x-5}$
23. $\frac{(x-y)(2x+3y+x+y)}{(x-y)(x+y)(2x+3y)} = \frac{3x+4y}{(x+y)(2x+3y)}$
24. $(x+1)-(x-3) = 4$
25. $\frac{x^2+2xy+4y^2-(x^2+4y^2)}{(x-2y)(x^2+2xy+4y^2)} = \frac{2xy}{x^2-8y^2}$
26. $\frac{x+2+(x^2-1)}{(x-1)(x^2+x+1)} = \frac{1}{x-1}$
27. $\frac{x^2-x-6-(x^2+x-6)}{x-3} = \frac{2x}{x-3}$
28. $2x+5 - \frac{x^2+2x-15}{x-3} = \frac{(x+y)^2}{(x-y)} - 1$
29. $\frac{x+a}{x-a} - \frac{x^2+a^2}{ax-a^2}$
30. $\left(\frac{x+y}{x-y} \right)^2 - 1$
31. $\frac{1}{x+1} - \left(\frac{1}{x-1} - \frac{1}{x^2-1} \right)$
32. $\frac{16x-x^2}{x^2-4} + \frac{2x+3}{2-x} + \frac{3x-2}{x+2}$
33. $\frac{1}{x-1} + \frac{2}{x-2} + \frac{1}{x-3}$
34. $\frac{a}{a^2-b^2} - \frac{1}{3(a-b)} - \frac{1}{3(a+b)}$
35. $\frac{1}{x+y} - \frac{1}{x-y} + \frac{2x}{x^2-y^2}$
36. $\frac{3}{x+6} - \frac{4x}{x^2-36} - \frac{2}{6-x}$
37. $\frac{3}{x^2+x-2} - \frac{5}{x^2-x-6}$
38. $\frac{5}{x^2-3x-4} - \frac{3}{x^2-x-2}$
39. $\frac{3x+13}{x^2-3x-10} - \frac{16}{x^2-6x+5}$
40. $\frac{6}{x^2-7x+12} + \frac{5x+9}{x^2-2x-3}$
41. $\frac{x-2}{x^2-x-2} + \frac{x-4}{x^2-5x+4}$
42. $\frac{x+4}{x^2-3x-28} - \frac{x-5}{x^2+2x-35}$
28. $\frac{2x^2-x-15-(x^2+2x-15)}{x-3} = x$
29. $\frac{ax+a^2-(x^2+a^2)}{a(x-a)} = -\frac{x}{a}$
30. $\frac{x^2+2xy+y^2-(x^2-2xy+y^2)}{(x-y)^2} = \frac{4xy}{(x-y)^2}$
31. $\frac{x-1-(x+1)+1}{(x+1)(x-1)} = -\frac{1}{x^2-1}$
32. $\frac{16x-x^2-(2x^2+7x+6)+(3x^2-8x+4)}{(x+2)(x-2)(x-3)} = \frac{x^2-3x+2}{(x-3)(x+2)}$
33. $\frac{x^2-5x+6+2(x^2-4x+3)+(x^2-3x+2)}{(x-1)(x-2)(x-3)} = \frac{4x^2-16x+14}{(x-1)(x-2)(x-3)}$
34. $\frac{3a-(a+b)-(a-b)}{3(a+b)(a-b)} = \frac{a}{3a^2-3b^2}$
35. $\frac{x-y-(x+y)+2x}{(x+y)(x-y)} = \frac{2}{x+y}$
36. $\frac{3x-18-4x-2(-x+6))}{(x+6)(x-6)} = \frac{1}{x+6}$
37. $\frac{3(x-3)-5(x-1)}{(x+2)(x-1)} = -\frac{2}{(x+1)(x-3)}$
38. $\frac{5(x-2)-3(x-4)}{(x-4)(x+1)(x-2)} = \frac{2}{(x-4)(x-2)}$
39. $\frac{3x^2+10x-13-16(x+2)}{(x-5)(x+2)(x-1)} = \frac{3(x-5)(x+2)(x-1)}{(x-5)(x+2)(x-1)}$
40. $\frac{6x+6+5x^2-11x-36}{(x-3)(x-4)(x+1)} = \frac{5(x-3)(x+2)}{(x-3)(x-4)(x+1)}$
41. $\frac{1}{x+1} + \frac{1}{x-1} = \frac{x-1+x+1}{(x+1)(x-1)} = \frac{2x}{x^2-1}$
42. $\frac{1}{x-7} - \frac{1}{x+7} = \frac{x+7-(x-7)}{(x+7)(x-7)} = \frac{14}{x^2-49}$