7.4

1) $\dfrac{2}{a+3} + \dfrac{4}{a+3} = \dfrac{6}{a+3}$

3) $\dfrac{t^2+4t}{t-1} + \dfrac{2t-7}{t-1} = \dfrac{t^2+6t-7}{t-1} = \dfrac{(t+7)(t-1)}{t-1} = t+7$

5) $\dfrac{2x^2+3}{x^2-6x+5} + \dfrac{-x^2+5x+(-9)}{x^2-6x+5} = \dfrac{x^2+5x-6}{x^2-6x+5} =$
$\dfrac{(x+6)(x-1)}{(x+5)(x-1)} = \dfrac{x+6}{x+5}$

7) $\dfrac{(4)}{(4)}\dfrac{5}{6r} + \dfrac{-5}{8r}\dfrac{(3)}{(3)}$
$LCD : 24r$
$\dfrac{20}{24r} + \dfrac{-15}{24r} = \dfrac{5}{24r}$

9) $\dfrac{(2)}{(2)}\dfrac{8}{9t^3} + \dfrac{5}{6t^2}\dfrac{(3t)}{(3t)}$
$LCD : 18t^3$
$\dfrac{16}{18t^3} + \dfrac{15t}{18t^3} = \dfrac{16+15t}{18t^3}$

11) $\dfrac{(2)}{(2)}\dfrac{a+2}{2} + \dfrac{-a+4}{4}$
$LCD : 4$
$\dfrac{2a+4}{4} + \dfrac{-a+4}{4} = \dfrac{a+8}{4}$

13) $\dfrac{x-1}{4x} + \dfrac{-2x-3}{x}\dfrac{(4)}{(4)}$
$LCD : 4x$
$\dfrac{x-1}{4x} + \dfrac{-8x-12}{4x} = \dfrac{-7x-13}{4x}$

15) $\dfrac{(y)}{(y)}\dfrac{5x+3y}{2x^2 y} + \dfrac{-3x-4y}{xy^2}\dfrac{(2x)}{(2x)}$
$LCD : 2x^2 y^2$
$\dfrac{5xy+3y^2}{2x^2 y^2} + \dfrac{-6x^2-8xy}{2x^2 y^2} = \dfrac{-6x^2-3xy+3y^2}{2x^2 y^2}$

17) $\dfrac{(z+1)}{(z+1)}\dfrac{2z}{z-1} + \dfrac{-3z}{z+1}\dfrac{(z-1)}{(z-1)}$
$LCD : (z-1)(z+1)$
$\dfrac{2z^2+2z}{(z-1)(z+1)} + \dfrac{-3z^2+3z}{(z-1)(z+1)} = \dfrac{-a^2+5z}{(z-1)(z+1)}$

19) $\dfrac{8}{x^2-4} + \dfrac{-3}{x+2}\dfrac{(x-2)}{(x-2)}$
$LCD : (x+2)(x-2)$
$\dfrac{8}{(x+2)(x-2)} + \dfrac{-3x+6}{(x+2)(x-2)} = \dfrac{-3x+14}{(x+2)(x-2)}$

21) $\dfrac{(4)}{(4)}\dfrac{t}{t-3} + \dfrac{-5}{4t-12}$
$LCD : 4(t-3)$
$\dfrac{4t}{4(t-3)} + \dfrac{-5}{4(t-3)} = \dfrac{4t-5}{4(t-3)}$

23) $\dfrac{(3)}{(3)}\dfrac{2}{5x^2+5x} + \dfrac{-4}{3x+3}\dfrac{(5x)}{(5x)}$
$\qquad 5x(x+1) \quad 3(x+1)$
$LCD : 15x(x+1)$
$\dfrac{6}{15x(x+1)} + \dfrac{-20x}{15x(x+1)} = \dfrac{6-20x}{15x(x+1)}$

25) $\dfrac{(y+t)}{(y+t)}\dfrac{t}{y-t} + \dfrac{-y}{y+t}\dfrac{(y-t)}{(y-t)}$
$LCD : (y+t)(y-t)$
$\dfrac{yt+t^2}{(y+t)(y-t)} + \dfrac{-y^2+yt}{(y+t)(y-t)} = \dfrac{t^2+2yt-y^2}{(y+t)(y-t)}$

27) $\dfrac{(x+1)}{(x+1)}\dfrac{x}{x^2+5x+6} + \dfrac{-2}{x^2+3x+2}\dfrac{(x+3)}{(x+3)}$
$\qquad (x+2)(x+3) \quad (x+1)(x+2)$
$LCD : (x+1)(x+2)(x+3)$
$\dfrac{x^2+x}{(x+1)(x+2)(x+3)} + \dfrac{-2x-6}{(x+1)(x+2)(x+3)} = \dfrac{x^2-x-6}{(x+1)(x+2)(x+3)} = \dfrac{(x-3)(x+2)}{(x+1)(x+2)(x+3)} = \dfrac{x-3}{(x+1)(x+3)}$

29) $\dfrac{(x+6)}{(x+6)}\dfrac{x}{x^2+15x+56}+\dfrac{-7}{x^2+13x+42}\dfrac{(x+8)}{(x+8)}$

$\qquad\quad (x+7)(x+8)\quad (x+7)(x+6)$

$\quad LCD: (x+6)(x+7)(x+8)$

$\quad \dfrac{x^2+6x}{(x+6)(x+7)(x+8)}+\dfrac{-7x-56}{(x+6)(x+7)(x+8)}=\dfrac{x^2-x-56}{(x+6)(x+7)(x+8)}=\dfrac{(x-8)(x+7)}{(x+6)(x+7)(x+8)}=\dfrac{x-8}{(x+6)(x+8)}$

31) $\dfrac{(x+3)}{(x+3)}\dfrac{5x}{x^2-x-6}+\dfrac{-18}{x^2-9}\dfrac{(x+2)}{(x+2)}$

$\qquad\quad (x-3)(x+2)\quad (x+3)(x-3)$

$\quad LCD: (x+2)(x-3)(x+3)$

$\quad \dfrac{5x^2+15x}{(x+2)(x-3)(x+3)}+\dfrac{-18x-36}{(x+2)(x-3)(x+3)}=\dfrac{5x^2-3x-36}{(x+2)(x-3)(x+3)}=\dfrac{(5x+12)(x-3)}{(x+2)(x-3)(x+3)}=\dfrac{5x+12}{(x+2)(x+3)}$

33) $\dfrac{(x+3)}{(x+3)}\dfrac{2x}{x^2-1}+\dfrac{-4}{x^2+2x-3}\dfrac{(x+1)}{(x+1)}$

$\qquad\quad (x+1)(x-1)\quad (x+3)(x-1)$

$\quad LCD: (x+3)(x+1)(x-1)$

$\quad \dfrac{2x^2+6x}{(x+3)(x+1)(x-1)}+\dfrac{-4x-4}{(x+3)(x+1)(x-1)}=\dfrac{2x^2+2x-4}{(x+3)(x+1)(x-1)}=\dfrac{2(x+2)(x-1)}{(x+3)(x+1)(x-1)}=\dfrac{2(x+2)}{(x+3)(x+1)}$

35) $\dfrac{(x+2)}{(x+2)}\dfrac{x+1}{x^2-2x-35}+\dfrac{x+6}{x^2+7x+10}\dfrac{(x-7)}{(x-7)}$

$\qquad\quad (x-7)(x+5)\quad (x+5)(x+2)$

$\quad LCD: (x+2)(x+5)(x-7)$

$\quad \dfrac{x^2+x+2x+2}{(x+2)(x+5)(x-7)}+\dfrac{x^2-7x+6x-42}{(x+2)(x+5)(x-7)}=\dfrac{2x^2+2x-40}{(x+2)(x+5)(x-7)}=\dfrac{2(x+5)(x-4)}{(x+2)(x+5)(x-7)}=\dfrac{2(x-4)}{(x-7)(x+2)}$

37) $\dfrac{(-1)}{(-1)}\dfrac{4-a^2}{a^2-9}+\dfrac{-a+2}{3-a}\dfrac{(a+3)}{(a+3)}$

$\quad (a+3)(a-3)\ (-1)(a-3)$

$\quad LCD: (-1)(a+3)(a-3)$

$\quad \dfrac{a^2-4}{(-1)(a+3)(a-3)}+\dfrac{-a^2-3a+2a+6}{(-1)(a+3)(a-3)}=\dfrac{-a+2}{(-1)(a+3)(a-3)}$

39) $\dfrac{(2z+1)}{(2z+1)}\dfrac{2z}{1-2z}+\dfrac{(-1)(2z-1)}{(-1)(2z-1)}\dfrac{3z}{2z+1}+\dfrac{-3}{4z^2-1}\dfrac{(-1)}{(-1)}$

$\qquad\quad (-1)(2z-1)\qquad\qquad\qquad (2z+1)(2z-1)$

$\quad LCD: (-1)(2z-1)(2z+1)$

$\quad \dfrac{4z^2+2z}{(-1)(2z-1)(2z+1)}+\dfrac{-6z^2+3z}{(-1)(2z-1)(2z+1)}+\dfrac{3}{(-1)(2z-1)(2z+1)}=\dfrac{-2z^2+5z+3}{(-1)(2z-1)(2z+1)}=\dfrac{(-1)(2z+1)(z-3)}{(-1)(2z-1)(2z+1)}=$

$\quad \dfrac{z-3}{2z-1}$

41) $\dfrac{(x+3)}{x+3}\dfrac{2x-3}{x^2+3x+2}+\dfrac{3x-1}{x^2+5x+6}\dfrac{(x+1)}{(x+1)}$

$\qquad\quad (x+1)(x+2)\ (x+3)(x+2)$

$\quad LCD: (x+1)(x+2)(x+3)$

$\quad \dfrac{2x^2-3x+6x-9}{(x+1)(x+2)(x+3)}+\dfrac{3x^2+3x-x-1}{(x+1)(x+2)(x+3)}=\dfrac{(5x^2+5x-10)}{(x+1)(x+2)(x+3)}=\dfrac{5(x+2)(x-1)}{(x+1)(x+2)(x+3)}=\dfrac{5(x-1)}{(x+1)(x+3)}$

43) $\dfrac{(x+5)}{(x+5)}\dfrac{(2x+7)}{(x^2-2x-3)} + \dfrac{-3x+2}{x^2+6x+5}\dfrac{(x-3)}{(x-3)}$

$\qquad\qquad (x-3)(x+1) \qquad (x+5)(x+1)$

$LCD : (x+1)(x-3)(x+5)$

$\dfrac{2x^2+7x+10x+35}{(x+1)(x-3)(x+5)} + \dfrac{(-3x^2+9x+2x-6)}{(x+1)(x-3)(x+5)} = \dfrac{-x^2+28x+29}{(x+1)(x-3)(x+5)} = \dfrac{-1(x-29)(x+1)}{(x+1)(x-3)(x+5)} = \dfrac{(-1)(x-29)}{(x-3)(x+5)}$