

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

$$= \frac{5x+1}{4x-1} \quad \text{where } x \neq \frac{1}{4}$$

$$3. \frac{3x-4}{4x+5} - \frac{5x+3}{4x+5}$$

$$= \frac{3x-4-5x-3}{4x+5}$$

$$= \frac{-2x-7}{4x+5} \quad \text{where } x \neq -\frac{5}{4}$$

$$4. \frac{4x-3}{2x-5} - \frac{4x+3}{2x-5}$$

$$= \frac{4x-3-4x-3}{2x-5} = \frac{-6}{2x-5} \quad \text{where } x \neq \frac{5}{2}$$

$$5. 4x^2y^3 \text{ and } 16x^4y$$

$$= 16x^4y^3$$

$$6. x^2-25 \text{ and } x^2+10x+25$$

$$(x+5)(x-5) \quad (x+5)(x+5)$$

$$= (x-5)(x+5)(x+5)$$

$$7. \frac{3x-2}{x+6} + \frac{2x-3}{2x-1}$$

$$\frac{(3x-2)(2x-1)}{(x+6)(2x-1)} + \frac{(2x-3)(x+6)}{(x+6)(2x-1)}$$

$$= \frac{6x^2-7x+2}{(x+6)(2x-1)} + \frac{2x^2+9x-18}{(x+6)(2x-1)}$$

$$= \frac{8x^2+2x-16}{(x+6)(2x-1)} \quad \text{where } x \neq -6, \frac{1}{2}$$

$$8. \frac{4x-5}{12x+4} + \frac{3x-1}{3x+1}$$

$$\frac{4x-5}{4(3x+1)} + \frac{3x-1}{3x+1}$$

$$\frac{4x-5}{4(3x+1)} + \frac{(3x-1)4}{(3x+1)4}$$

$$\frac{4x-5}{4(3x+1)} + \frac{12x-4}{4(3x+1)}$$

$$= \frac{16x-9}{4(3x+1)} \quad \text{where } x \neq -\frac{1}{3}$$

$$9. \frac{3x-4}{x^2-9} + \frac{2x-1}{x+3}$$

$$\frac{3x-4}{(x+3)(x-3)} + \frac{2x-1}{x+3}$$

$$\frac{3x-4}{(x+3)(x-3)} + \frac{(2x-1)(x-3)}{(x+3)(x-3)}$$

$$\frac{3x-4}{(x+3)(x-3)} + \frac{2x^2-7x+3}{(x+3)(x-3)}$$

$$= \frac{2x^2-4x-1}{(x+3)(x-3)} \quad \text{where } x \neq \pm 3$$

$$10. \frac{3x-5}{2x-5} - \frac{2x-5}{3x+1}$$

$$\frac{(3x-5)(3x+1)}{(2x-5)(3x+1)} - \frac{(2x-5)(2x-5)}{(2x-5)(3x+1)}$$

$$\frac{9x^2-12x-5}{(2x-5)(3x+1)} - \frac{4x^2-20x+25}{(2x-5)(3x+1)}$$

$$= \frac{9x^2-12x-5-4x^2+20x-25}{(2x-5)(3x+1)}$$

$$= \frac{5x^2+8x-30}{(2x-5)(3x+1)} \quad \text{where } x \neq 5/2, -1/3$$

$$11. \frac{2x+8}{x^2-16} - \frac{3}{x-4}$$

$$\frac{2(x+4)}{(x-4)(x+4)} - \frac{3}{x-4}$$

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

$$= \frac{-1}{x-4} \quad \text{where } x \neq \pm 4$$

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

$$\frac{x+2}{(x+3)(x+1)} - \frac{x+1}{x+3}$$

$$\frac{x+2}{(x+3)(x+1)} - \frac{(x+1)(x+1)}{(x+3)(x+1)}$$

$$= \frac{x+2}{(x+3)(x+1)} - \frac{x^2+2x+1}{(x+3)(x+1)}$$

$$= \frac{x+2-x^2-2x-1}{(x+3)(x+1)}$$

$$= \frac{-x^2-x+1}{(x+3)(x+1)} \quad \text{where } x \neq -3, -1$$

$$17. \frac{2x-3}{4x-7} + \frac{2x-3}{4x-7}$$

$$= \frac{4x-6}{4x-7} \quad \text{where } x \neq 7/4$$

$$18. \frac{x-5}{3x+4} - \frac{3x-5}{3x+4}$$

$$\frac{x-5-3x+5}{3x+4}$$

$$= \frac{-2x}{3x+4} \quad \text{where } x \neq -4/3$$

$$19. \frac{x^2 - 3}{2x + 7} - \frac{2x - 5}{2x + 7}$$

$$= \frac{x^2 - 2x + 2}{2x + 7} \quad \text{where } x \neq -7/2$$

$$20. 12x^2 y^3 \text{ and } 14x^3 y^2$$

$$= \boxed{84x^3 y^3}$$

$$21. 16x^2 - 25 \text{ and } 4x^2 - x - 5$$

$$(4x+5)(4x-5) \quad (4x-5)(x+1)$$

$$= \boxed{(4x+5)(4x-5)(x+1)}$$

$$22. \frac{3x-2}{x+2} + \frac{2x}{4x-1}$$

$$\frac{(3x-2)(4x-1)}{(x+2)(4x-1)} + \frac{2x(x+2)}{(x+2)(4x-1)}$$

$$\frac{12x^2 - 11x + 2}{(x+2)(4x-1)} + \frac{2x^2 + 4x}{(x+2)(4x-1)}$$

$$= \boxed{\frac{14x^2 - 7x + 2}{(x+2)(4x-1)} \quad \text{where } x \neq -2, 1/4}$$

$$23. \frac{2x-7}{x-2} + \frac{8x}{3x-6}$$

$$\frac{2x-7}{x-2} + \frac{8x}{3(x-2)}$$

$$\frac{3(2x-7)}{3(x-2)} + \frac{8x}{3(x-2)}$$

$$\frac{6x-21}{3(x-2)} + \frac{8x}{3(x-2)}$$

$$= \boxed{\frac{14x-21}{3(x-2)} \quad \text{where } x \neq 2}$$

$$24. \frac{5x}{4x^2} + \frac{7}{x+1}$$

$$\frac{5}{4x} + \frac{7}{x+1}$$

$$\frac{5(x+1)}{4x(x+1)} + \frac{7(4x)}{4x(x+1)}$$

$$= \frac{5x+5}{4x(x+1)} + \frac{28x}{4x(x+1)}$$

$$= \boxed{\frac{33x+5}{4x(x+1)} \quad \text{where } x \neq 0, -1}$$

$$25. \frac{4x-3}{x^2-9} - \frac{2x+3}{x-3}$$

$$\frac{4x-3}{(x+3)(x-3)} - \frac{2x+3}{x-3}$$

$$\frac{4x-3}{(x+3)(x-3)} - \frac{(2x+3)(x+3)}{(x+3)(x-3)}$$

$$\frac{4x-3}{(x+3)(x-3)} - \frac{2x^2+9x+9}{(x+3)(x-3)}$$

$$\frac{4x-3-2x^2-9x-9}{(x+3)(x-3)}$$

$$= \frac{-2x^2-5x-12}{(x+3)(x-3)} \quad \text{where } x \neq \pm 3$$

$$26. \frac{x}{2x+3} - \frac{2x+1}{2x-3}$$

$$\frac{x-2x-1}{2x+3}$$

$$\frac{-x-1}{2x+3}$$

$$\frac{-1(x+1)}{2x+3} \quad \text{where } x \neq -3/2$$

$$27. \frac{1}{x-4} - \frac{2}{x^2-6x+8}$$

$$\frac{1}{x-4} - \frac{2}{(x-4)(x-2)}$$

$$\frac{(x-2)}{(x-2)} \frac{1}{x-4} - \frac{2}{(x-4)(x-2)}$$

$$\frac{x-2}{(x-2)(x-4)} - \frac{2}{(x-4)(x-2)}$$

$$\frac{x-2-2}{(x-2)(x-4)}$$

$$\frac{x-4}{(x-2)(x-4)}$$

$$= \frac{1}{x-2} \quad \text{where } x \neq 2, 4$$