

7.5

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

$$3) \frac{(a)a - 2(a)}{(a)\frac{4}{a} - a(a)} = \frac{a^2 - 2a}{4 - a^2} = \frac{a(a-2)(-1)}{(2+a)(2-a)} = \frac{-a}{a+2}$$

$$5) \frac{(a^2)\frac{1}{a^2} - \frac{1}{a}(a^2)}{(a^2)\frac{1}{a^2} + \frac{1}{a}(a^2)} = \frac{1-a}{1+a}$$

$$7) \frac{(x+2)2 - \frac{4}{x+2}(x+2)}{(x+2)5 - \frac{10}{x+2}(x+2)} = \frac{2x+4-4}{5x+10-10} = \frac{2x}{5x} = \frac{2}{5}$$

$$9) \frac{(2a-3)\frac{3}{(2a-3)} + 2(2a-3)}{(2a-3)\frac{-6}{(2a-3)} - 4(2a-3)} = \frac{3+4a-6}{-6-8a+12} = \frac{4a-3}{-8a+6} = \frac{4a-3}{-2(4a-3)} = -\frac{1}{2}$$

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

$$13) \frac{(x^2)\frac{3}{x}}{(x^2)\frac{9}{x^2}} = \frac{3x}{9} = \frac{x}{3}$$

$$15) \frac{(16a^2b^2)\frac{a^2-b^2}{4a^2b}}{(16a^2b^2)\frac{a+b}{16ab^2}} = \frac{4b(a^2-b^2)}{a(a+b)} = \frac{4b(a+b)(a-b)}{a(a+b)} = \frac{4b(a-b)}{a}$$

$$17) \frac{(x^2)1 - \frac{3}{x}(x^2) - \frac{10}{x^2}(x^2)}{(x^2)1 + \frac{11}{x}(x^2) + \frac{18}{x^2}(x^2)} = \frac{x^2 - 3x - 10}{x^2 + 11x + 18} = \frac{(x-5)(x+2)}{(x+9)(x+2)} = \frac{x-5}{x+9}$$

$$19) \frac{(3x-4)1 - \frac{2x}{(3x-4)}(3x-4)}{(3x-4)x - \frac{32}{(3x-4)}(3x-4)} = \frac{3x-4-2x}{3x^2-4x-32} = \frac{x-4}{(3x+8)(x-4)} = \frac{1}{3x+8}$$

$$21) \frac{(x-4)x - (x-4)1 + \frac{2}{(x-4)}(x-4)}{(x-4)x + (x-4)3 + \frac{6}{(x-4)}(x-4)} = \frac{x^2 - 4x - x + 4 + 2}{x^2 - 4x + 3x - 12 + 6} = \frac{x^2 - 5x + 6}{x^2 - x - 6} = \frac{(x-2)(x+3)}{(x-3)(x+2)} = \frac{(x-2)}{x+2}$$

$$23) \frac{(2x+3)x - (2x+3)4 + \frac{9}{(2x+3)}(2x+3)}{(2x+3)x + (2x+3)3 - \frac{5}{(2x+3)}(2x+3)} = \frac{2x^2 + 3x - 8x - 12 + 9}{2x^2 + 3x + 6x + 9 - 5} = \frac{(2x+1)(x-3)}{(2x+1)(x+4)} = \frac{x-3}{x+4}$$

$$25) \frac{b(b+3)\frac{2}{b} - \frac{5}{b+3}b(b+3)}{b(b+3)\frac{3}{b} + \frac{3}{b+3}b(b+3)} = \frac{2b+6-5b}{3b+9+3b} = \frac{-3b+6}{6b+9} = \frac{(-3)(b-2)}{3(2b+3)} = \frac{(-1)(b-2)}{2b+3}$$

$$27) \frac{(a^2b^2)\frac{2}{b^2} - (a^2b^2)\frac{5}{ab} - \frac{3}{a^2}(a^2b^2)}{(a^2b^2)\frac{2}{b^2} - (a^2b^2)\frac{7}{ab} + \frac{3}{a^2}(a^2b^2)} = \frac{2a^2 - 5ab - 3b^2}{2a^2 + 7ab + 3b^2} = \frac{(2a+b)(a-3b)}{(2a+b)(a+3b)} = \frac{a-3b}{a+3b}$$

$$29) \frac{(y+2)(y-2)\frac{y}{y+2} - \frac{y}{y-2}(y+2)(y-2)}{(y+2)(y-2)\frac{y}{y+2} + \frac{y}{y-2}(y+2)(y-2)} = \frac{y^2 - 2y - y^2 - 2y}{y^2 - 2y + y^2 + 2y} = \frac{-4y}{2y^2} = -\frac{2}{y}$$

$$31) \frac{x^{-2} - y^{-2}}{x^{-1} + y^{-1}} = \frac{(x^2y^2)\frac{1}{x^2} - \frac{1}{y^2}(x^2y^2)}{(x^2y^2)\frac{1}{x} + \frac{1}{y}(x^2y^2)} = \frac{y^2 - x^2}{xy^2 + x^2y} = \frac{(y+x)(y-x)}{xy(y+x)} = \frac{y-x}{xy}$$

$$33) \frac{x^{-3}y - xy^{-3}}{x^{-2} - y^{-2}} = \frac{(x^3y^3)\frac{y}{x^3} - \frac{x}{y^3}(x^3y^3)}{(x^3y^3)\frac{1}{x^2} - \frac{1}{y^2}(x^3y^3)} = \frac{y^4 - x^4}{xy^3 - x^3y} = \frac{(y^2+x^2)(y^2-x^2)}{xy(y^2-x^2)} = \frac{y^2+x^2}{xy}$$

$$35) \frac{x^{-2} - 6x^{-1} + 9}{x^2 - 9} = \frac{(x^2)\frac{1}{x^2} - (x^2)\frac{6}{x} + 9(x^2)}{(x^2)x^2 - 9} = \frac{1 - 6x + 9x^2}{x^2(x^2 - 9)} = \frac{(1-3x)^2}{(x^2)(x+3)(x-3)}$$