7B

① $\dfrac{6a}{b} \times \dfrac{a}{b^2} = \dfrac{6a^2}{b^3}$

② $\dfrac{5xy}{3} \div 15xy^2 = \dfrac{\cancel{5xy}}{3} \times \dfrac{1}{\cancel{15}xy^{\cancel{2}}} = \dfrac{1}{9y}$

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

④ $\dfrac{5x-1}{x+3} \times \dfrac{x^2+6x+9}{5x^2+4x-1} = \dfrac{(\cancel{5x-1})}{(\cancel{x+3})} \times \dfrac{(\cancel{x+3})(x+3)}{(\cancel{5x-1})(x+1)} = \dfrac{x+3}{x+1}$

⑤ $\dfrac{4x^2-25}{4x^2+20x+25} = \dfrac{(\cancel{2x+5})(2x-5)}{(\cancel{2x+5})(2x+5)} = \dfrac{2x-5}{2x+5}$

⑥ $\dfrac{a^2+a-12}{5} \times \dfrac{3}{4a-12} = \dfrac{(a+4)(\cancel{a-3})}{5} \times \dfrac{3}{4(\cancel{a-3})} = \dfrac{3(a+4)}{20}$

⑦ $\dfrac{4x^2-9}{x^2+2x+1} \div \dfrac{2x-3}{x^2+x} = \dfrac{4x^2-9}{x^2+2x+1} \times \dfrac{x^2+x}{2x-3}$

$= \dfrac{(\cancel{2x-3})(2x+3)}{(x+1)(\cancel{x+1})} \times \dfrac{x(\cancel{x+1})}{(\cancel{2x-3})}$

$= \dfrac{x(2x+3)}{(x+1)}$

⑧ $\dfrac{2p+4}{5} \div \dfrac{p^2-4}{1} = \dfrac{2p+4}{5} \times \dfrac{1}{p^2-4} = \dfrac{2(\cancel{p+2})}{5} \times \dfrac{1}{(\cancel{p+2})(p-2)}$

$= \dfrac{2}{5(p-2)}$

⑨ $\dfrac{a^2-b^2}{2a^2+ab-b^2} = \dfrac{(a+b)(a-b)}{(2a-b)(a+b)} = \dfrac{a-b}{2a-b}$

⑩ $\dfrac{x^2+8x+16}{x^2+6x+9} \times \dfrac{x^2+2x-3}{x^2+4x} = \dfrac{(x+4)(x+4)}{(x+3)(x+3)} \times \dfrac{(x+3)(x-1)}{x(x+4)}$

$$= \dfrac{(x+4)(x-1)}{x(x+3)}$$

⑪ $\dfrac{1}{4x} + \dfrac{1}{5x} = \dfrac{5+4}{20x} = \dfrac{9}{20x}$

⑫ $\dfrac{x}{3} - \dfrac{(x+1)}{4} = \dfrac{4x-3(x+1)}{12} = \dfrac{4x-3x-3}{12} = \dfrac{x-3}{12}$

⑬ $\dfrac{a}{a+1} + \dfrac{1}{a-1} = \dfrac{a(a-1)+1(a+1)}{(a+1)(a-1)} = \dfrac{a^2-a+a+1}{(a+1)(a-1)} = \dfrac{a^2+1}{(a+1)(a-1)}$

$$= \dfrac{a^2+1}{a^2-1}$$

⑭ $\dfrac{2}{(x-3)} + \dfrac{3}{(x-2)} = \dfrac{2(x-2)+3(x-3)}{(x-3)(x-2)} = \dfrac{2x-4+3x-9}{(x-3)(x-2)} = \dfrac{5x-13}{(x-3)(x-2)}$

⑮ $\dfrac{x}{(x^2-4)} - \dfrac{1}{(x+2)}$

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

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

$$= \dfrac{x-x+2}{(x+2)(x-2)} = \dfrac{2}{(x+2)(x-2)} = \dfrac{2}{x^2-4}$$

(16) $\dfrac{p^2}{p^2-1} - \dfrac{p^2}{p^2+1} = \dfrac{p^2(p^2+1) - p^2(p^2-1)}{(p^2-1)(p^2+1)} = \dfrac{p^4+p^2-p^4+p^2}{(p^2-1)(p^2+1)}$

$$= \dfrac{2p^2}{(p^2-1)(p^2+1)}$$

(17) $\dfrac{2}{a+1} - \dfrac{a}{a^2+1} = \dfrac{2(a^2+1) - a(a+1)}{(a+1)(a^2+1)} = \dfrac{2a^2+2-a^2-a}{(a+1)(a^2+1)}$

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

(18) $\dfrac{2y}{(y+2)^2} - \dfrac{4}{y+4} = \dfrac{2y(y+4) - 4(y+2)^2}{(y+2)^2(y+4)}$

$$= \dfrac{2y^2+8y - 4(y^2+4y+4)}{(y+2)^2(y+4)}$$

$$= \dfrac{2y^2+8y - 4y^2 - 16y - 16}{(y+2)^2(y+4)}$$

$$= \dfrac{-2y^2 - 8y - 16}{(y+2)^2(y+4)}$$

$$= \dfrac{-2(y^2+4y+8)}{(y+2)^2(y+4)}$$

(19) $\dfrac{x}{1} + \dfrac{1}{x+1} = \dfrac{x(x+1) + 1(1)}{1(x+1)} = \dfrac{x^2+x+1}{(x+1)}$

(20)

$$\frac{2}{b^2+2b+1} - \frac{3}{b+1}$$

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

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

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

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

(21)

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

$$\frac{4(x+1)+9(x-1)}{6(x-1)(x+1)} = \frac{4x+4+9x-9}{6(x-1)(x+1)} = \frac{13x-5}{6(x-1)(x+1)}$$

(22)

$$\frac{6}{5(x+2)} - \frac{2x}{(x+2)^2}$$

$$= \frac{6}{5(x+2)} - \frac{2x}{(x+2)(x+2)}$$

$$= \cancel{6(5x+2)}$$

$$= \frac{6(x+2) - 2x(5)}{5(x+2)(x+2)}$$

$$= \frac{6x+12 - 10x}{5(x+2)^2} = \frac{-4x+12}{5(x+2)^2} = \frac{4(-x+3)}{5(x+2)^2}$$

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

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$$\frac{2}{a+2} - \frac{a-2}{2a^2+a-6}$$

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

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

$$= \frac{4a-6 - a+2}{(2a-3)(a+2)}$$

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

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

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

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

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