

$$\textcircled{1} \quad \frac{(7x+3)}{9x} + \frac{(x-5)}{8} \quad \text{LCD } (9x)(8)$$

$$\frac{(7x+3)}{(9x)} \cdot \frac{8}{8} + \frac{(x-5)}{8} \cdot \frac{9x}{9x}$$

$$\frac{56x+24}{\text{LCD}} + \frac{9x^2 - 45x}{\text{LCD}}$$

$$\frac{9x^2 + 56x - 45x + 24}{\text{LCD}}$$

$$\boxed{\frac{9x^2 + 11x + 24}{72x}}$$

$$\textcircled{2} \quad \frac{11x^2 + 3x}{5x} + \frac{x^2 - 4x}{x - 8}$$

$$\boxed{\frac{x}{x}} \cdot \left(\frac{11x+3}{5} \right) + \frac{x^2-4x}{x-8}$$

$$\frac{11x+3}{5} + \frac{x^2-4x}{x-8} \quad \text{LCD } 5(x-8)$$

$$\left(\frac{x-8}{x-8} \cdot \frac{11x+3}{5} \right) + \left(\frac{x^2-4x}{x-8} \right) \cdot \frac{5}{5}$$

$$\frac{11x^2 - 88x + 3x - 24}{LCD} + \frac{5x^2 - 20x}{LCD}$$

$$\frac{11x^2 + 5x^2 - 88x + 3x - 24}{LCD} - 24$$

$$\frac{16x^2 - 108x + 3x - 24}{LCD} - 24$$

$$\boxed{\frac{16x^2 - 105x - 24}{5(x-8)} - 24}$$

$$\textcircled{3} \quad \frac{6x+3}{7x^3} - \frac{8x-5}{4}$$

$$\frac{6x+3}{7x^3} + -\frac{(8x-5)}{4}$$

$$\frac{6x+3}{7x^3} + \frac{-8x+5}{4} \quad \text{LCD}(7x^3)(4)$$

$$\frac{4}{1} \cdot \left(\frac{6x+3}{7x^3} \right) + \left(\frac{8x+5}{4} \right) \cdot \frac{7x^3}{7x^3}$$

$$\frac{24x+12}{\text{LCD}} + \frac{-56x^4+35x^3}{\text{LCD}}$$

$$\boxed{\frac{-56x^4+35x^3+24x+12}{28x^3}}$$

$$\textcircled{u} \quad \frac{x^2+4x}{6x+s} - \frac{7x^2-1x}{sx}$$

$$\frac{x^2+4x}{6x+s} - \frac{7x^2-1}{s} \cdot \left(\frac{x}{x} \right)$$

$$\frac{x^2+4x}{6x+s} + -\frac{(7x-1)}{s}$$

$$\frac{x^2+4x}{6x+s} + \frac{-7x+1}{s} \quad \text{LCD } (s)(6x+s)$$

$$\frac{s}{s} \cdot \left(\frac{x^2+4x}{6x+s} \right) + \left(\frac{-7x+1}{s} \right) \cdot \cancel{(6x+s)}$$

$$\frac{sx^2+20x}{\text{LCD}} + \frac{-42x^2-35x+6x+s}{\text{LCD}}$$

$$\frac{5x^2-42x^2-35x+20x+6x+s}{\text{LCD}}$$

$$\frac{-37x^2-35x+26x+s}{\text{LCD}}$$

$$\boxed{\frac{-37x^2-9x+s}{s(6x+s)}}$$

$$⑤ \quad \frac{9x+2}{3x-8} + \frac{x-5}{x+6} \quad \text{LCD } (3x-8)(x+6)$$

$$\left(\frac{(x+6)}{(x+6)} \cdot \frac{9x+2}{3x-8} \right) + \left(\frac{(x-5)}{(x+6)} \cdot \frac{3x-8}{3x-8} \right)$$

$$\frac{9x^2 + 2x + 54x + 12}{\text{LCD}} + \frac{3x^2 - 15x - 8x + 40}{\text{LCD}}$$

$$\frac{9x^2 + 3x^2 + 2x + 54x - 15x - 8x + 40 + \dots}{\text{LCD}}$$

$$\frac{12x^2 + 56x - 23x + 52 + \dots}{\text{LCD}}$$

$$\boxed{\frac{12x^2 + 33x + 52}{(3x-8)(x+6)}}$$

⑥

$$\frac{x^2+5x}{x+10} + \frac{x^2-2x}{x-6}$$

LCD $(x+10)(x-6)$

$$\left(\frac{x-6}{x-6} \right) \left(\frac{x^2+5x}{x+10} \right) + \left(\frac{x^2-2x}{x-6} \right) \left(\frac{x+10}{x+10} \right)$$

$$\frac{x^3 - 6x^2 + 5x^2 - 30x}{LCD} + \frac{x^3 + 10x^2 - 2x^2 - 20x}{LCD}$$

$$\frac{x^3 + x^3 - 6x^2 - 2x^2 + 5x^2 + 10x^2 - 30x - 20x}{LCD}$$

$$\frac{2x^3 - 8x^2 + 15x^2 - 50x}{LCD}$$

$$\boxed{\frac{2x^3 + 7x^2 - 50x}{(x+10)(x-6)}}$$

(7)

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

$$\frac{5x+3}{3x^3+5x} + \frac{-(3x-5)}{x-7}$$

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

$$\frac{(x-7)}{(x-7)} \cdot \left(\frac{5x+3}{3x^3+5x} \right) + \left(\frac{-3x+5}{x-7} \right) \frac{(3x^3+5x)}{(3x^3+5x)}$$

$$\frac{5x^2+3x-35x-21}{LCD} + \frac{-9x^4-15x^3+15x^2+28x-35x-21}{LCD}$$

$$\frac{-9x^4+15x^3-15x^2+28x-35x-21}{LCD}$$

$$\frac{-9x^4+15x^3-10x^2+28x-35x-21}{LCD}$$

$$-9x^4+15x^3-10x^2-7x-21$$

$$(3x^3+5x)(x-7)$$

⑧

$$\frac{x^2 - 2x}{4x+5} - \frac{12x^2 - 6x}{3x^2 + 9x}$$

$$\frac{x^2 - 2x}{4x+5} - \frac{4x-2}{x+3} \cdot \boxed{\frac{3x}{3x}}$$

$$\frac{x^2 - 2x}{4x+5} - \frac{4x-2}{x-3} \quad \text{LCD } (x-3)(4x+5)$$

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

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

$$\left(\frac{x^2 - 2x}{4x+5} \right) \cdot \left(\frac{x+3}{x-3} \right) + \left(\frac{4x+2}{x-3} \right) \cdot \left(\frac{4x+5}{4x+5} \right)$$

$$\frac{x^3 - 2x^2 + 3x^2 - 6x}{LCD} + -\frac{16x^2 + 8x - 20x + 10}{LCD}$$

$$\underline{x^3 - 16x^2 - 2x^2 + 3x^2 - 6x - 20x + 8x + 10} \quad \text{LCD}$$

$$\underline{x^3 - 18x^2 + 3x^2 - 26x + 8x + 10} \quad \text{LCD} =$$

$$\begin{cases} x^3 - 15x^2 - 18x + 10 \\ (4x+5)(3x^2 + 9x) \end{cases}$$