

Alg 2: Homework 23

$$\textcircled{1} \frac{7b}{1} \left(\frac{1}{7} \right) + \left(\frac{1}{b} \right) \frac{7b}{1}$$

$$= \frac{\left(\frac{1}{b} \right) 7b}{1}$$

$$= \boxed{\frac{b + 7}{7}}$$

$$\textcircled{2} \frac{8}{1} \left(\frac{x^2}{4} \right) - \left(\frac{1}{2} \right) 8$$

$$\frac{8(x)}{1(4)} - \left(\frac{1}{2} \right) \frac{8}{1}$$

$$= \frac{2x^2 - 8}{2x - 4}$$

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

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

$$= \boxed{x+2}$$

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

$$= \frac{4}{(y+3)(y-3)} \left(\frac{y}{y} \right) - \frac{2}{y(y-3)} \left(\frac{y+3}{y+3} \right)$$

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

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

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

$$\textcircled{4} \frac{k^3}{1} \left(\frac{1}{k} \right) - \frac{k^3}{1} \left(\frac{3}{k^2} \right) + \frac{k^3}{1} \left(\frac{2}{k^3} \right)$$

$$\frac{k^3 \left(\frac{1}{k} \right) - k^3 \left(\frac{4}{k^2} \right) + \frac{k^3 \left(\frac{4}{k^3} \right)}{1(k) - 1(k^2) + 1(k^3)}$$

$$= \frac{k^2 - 3k + 2}{k^2 - 4k + 4}$$

$$= \frac{(k-2)(k-1)}{(k-2)(k-2)}$$

$$= \boxed{\frac{k-1}{k-2}}$$

$$\textcircled{5} \frac{25-x^2}{x^2+7x} \cdot \frac{x^2+9x+14}{x^2+7x+10}$$

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

$$= \boxed{\frac{5-x}{x}}$$

$$\textcircled{6} \frac{\left(\begin{array}{c|c} 3 & (x+2)(x-2) \\ \hline x-2 & 1 \end{array} \right) - \left(\begin{array}{c|c} 3 & (x+2)(x-2) \\ \hline x+2 & 1 \end{array} \right)}{12} = \frac{(x+2)(x-2) - (x+2)(x-2)}{12}$$

$$= \frac{3(x+2) - 3(x-2)}{12}$$

$$= \frac{3x+6 - 3x+6}{12}$$

$$= \frac{12}{12} = \boxed{1}$$