

## 難 塾技 1 分数を含む 1 次式の加減

### 問題 1

$$\frac{4x-7y}{3} - 3 \times \frac{x-4y}{5} - \frac{2x-5y}{6} \text{ を計算せよ。}$$

(ラ・サール高)

### 問題 2

$$\frac{1}{2} \left( \frac{3x-y}{6} + \frac{-x+5y}{2} \right) - \left( \frac{2y-x}{3} \right) \text{ を計算しなさい。}$$

(立命館高)

### 問題 3

$$\frac{6x-3y+4}{3} - \frac{-3x+7y+3}{2} + \frac{1}{6} - x + y \text{ を簡単にせよ。}$$

(成城高)

### 問題 4

$$2 \left( \frac{a-b}{2} - \frac{a-3c}{6} \right) - 3 \left( \frac{b+4c}{2} - \frac{b-2a}{6} \right) + 6 \left( \frac{c+a}{2} - \frac{c-b}{3} \right) \text{ を簡単にせよ。}$$

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### 解 1

$$\begin{aligned} & \frac{4x-7y}{3} - 3 \times \frac{x-4y}{5} - \frac{2x-5y}{6} \\ &= \frac{10(4x-7y) - 18(x-4y) - 5(2x-5y)}{30} \\ &= \frac{40x-70y-18x+72y-10x+25y}{30} \\ &= \frac{12x+27y}{30} \\ &= \frac{4x+9y}{10} \quad \text{答} \end{aligned}$$

### 解 2

$$\begin{aligned} & \frac{1}{2} \left( \frac{3x-y}{6} + \frac{-x+5y}{2} \right) - \left( \frac{2y-x}{3} \right) \\ &= \frac{1}{2} \left( \frac{3x-y-3x+15y}{6} \right) - \frac{(2y-x)}{3} \\ &= \frac{1}{2} \left( \frac{14y}{6} \right) - \frac{(2y-x)}{3} \\ &= \frac{7y}{6} - \frac{(2y-x)}{3} \\ &= \frac{7y-4y+2x}{6} \\ &= \frac{2x+3y}{6} \quad \text{答} \end{aligned}$$

### 解 3

$$\begin{aligned} & \frac{6x-3y+4}{3} - \frac{-3x+7y+3}{2} + \frac{1}{6} - x + y \\ &= \frac{2(6x-3y+4) - 3(-3x+7y+3) + 1 - 6x + 6y}{6} \\ &= \frac{12x-6y+8+9x-21y-9+1-6x+6y}{6} \\ &= \frac{15x-21y}{6} \\ &= \frac{5x-7y}{2} \quad \text{答} \end{aligned}$$

### 解 4

$$\begin{aligned} & 2 \left( \frac{a-b}{2} - \frac{a-3c}{6} \right) - 3 \left( \frac{b+4c}{2} - \frac{b-2a}{6} \right) + 6 \left( \frac{c+a}{2} - \frac{c-b}{3} \right) \\ &= 2 \left( \frac{3a-3b-a+3c}{6} \right) - 3 \left( \frac{3b+12c-b+2a}{6} \right) + 6 \left( \frac{3c+3a-2c+2b}{6} \right) \\ &= \frac{2a-3b+3c}{3} - \frac{1}{2} \frac{2a+2b+12c}{1} + (3a+2b+c) \\ &= \frac{(2a-3b+3c) - 3(a+b+6c) + 3(3a+2b+c)}{3} \\ &= \frac{2a-3b+3c-3a-3b-18c+9a+6b+3c}{3} \\ &= \frac{8a-12c}{3} \quad \text{答} \end{aligned}$$