

式の展開(5)

【1】次の計算をなさい。

$$\begin{aligned}(1) (3x+5y) \times (-2y) \\ &= 3x \times (-2y) + 5y \times (-2y) \\ &= -6xy - 10y^2\end{aligned}$$

$$\begin{aligned}(2) \frac{1}{4}x(12x-8y) \\ &= \frac{1}{4}x \times 12x + \frac{1}{4}x \times (-8y) \\ &= 3x^2 - 2xy\end{aligned}$$

$$\begin{aligned}(3) (6xy+21y^2) \times \frac{2}{3}x &= 6xy \times \frac{2}{3}x + 21y^2 \times \frac{2}{3}x \\ &= 4x^2y + 14xy^2\end{aligned}$$

$$\begin{aligned}(4) (12x^2-30xy) \div 6x &= \frac{12x^2}{6x} - \frac{30xy}{6x} \\ &= 2x - 5y\end{aligned}$$

$$\begin{aligned}(5) (56x^2y+24xy^2) \div 8xy \\ &= \frac{56x^2y}{8xy} + \frac{24xy^2}{8xy} \\ &= 7x + 3y\end{aligned}$$

$$\begin{aligned}(6) (9xy+27y^2) \div \frac{3}{2}y \\ &= 9xy \times \frac{2}{3y} + 27y^2 \times \frac{2}{3y} \\ &= 6x + 18y\end{aligned}$$

【2】次の式を展開しなさい。

$$\begin{aligned}(1) (x-3)(x+8) \\ &= x^2 + \{(-3)+8\} \times x + (-3) \times 8 \\ &= x^2 + 5x - 24\end{aligned}$$

$$\begin{aligned}(2) (x+3)(x-9) \\ &= x^2 + (3-9) \times x + 3 \times (-9) \\ &= x^2 - 6x - 27\end{aligned}$$

$$\begin{aligned}(3) (x+9)^2 &= x^2 + 2 \times 9 \times x + 9^2 \\ &= x^2 + 18x + 81\end{aligned}$$

$$\begin{aligned}(4) \left(x + \frac{1}{2}\right)^2 &= x^2 + 2 \times \frac{1}{2} \times x + \left(\frac{1}{2}\right)^2 \\ &= x^2 + x + \frac{1}{4}\end{aligned}$$

$$\begin{aligned}(5) (x-11)^2 &= x^2 - 2 \times 11 \times x + 11^2 \\ &= x^2 - 22x + 121\end{aligned}$$

$$\begin{aligned}(6) (-6+x)^2 &= (x-6)^2 \\ &= x^2 - 12x + 36\end{aligned}$$

$$\begin{aligned}(7) (x+12)(x-12) &= x^2 - 12^2 \\ &= x^2 - 144\end{aligned}$$

$$\begin{aligned}(8) (-x+5)(-x-5) &= (-x)^2 - 5^2 \\ &= x^2 - 25\end{aligned}$$

$$\begin{aligned}(9) (x+8y)(x-4y) \\ &= x^2 + (8y-4y) \times x + 8y \times (-4y) \\ &= x^2 + 4xy - 32y^2\end{aligned}$$

$$\begin{aligned}(10) (x+2y+1)(x+2y+3) \\ &= (x+2y)^2 + (1+3) \times (x+2y) + 1 \times 3 \\ &= x^2 + 4xy + 4y^2 + 4x + 8y + 3\end{aligned}$$

【3】次の計算をなさい。

$$\begin{aligned}(1) (x+2)(x-2) - (x-7)(x-3) \\ &= x^2 - 4 - (x^2 - 10x + 21) \\ &= 10x - 25\end{aligned}$$

$$\begin{aligned}(2) (x-9)(x+2) + (x+1)(x+4) \\ &= x^2 - 7x - 18 + x^2 + 5x + 4 \\ &= 2x^2 - 2x - 14\end{aligned}$$