

# 2016-j3-p10-28-answer.tex

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年 \_\_\_\_\_ コース \_\_\_\_\_

名前 \_\_\_\_\_

1. 次の計算をなさい。

$$\begin{aligned}(1) \quad & 2a(3a - 5b) \\ &= 2a \times 3a - 2a \times 5b \\ &= 6a^2 - 10ab\end{aligned}$$

$$\begin{aligned}(2) \quad & (x - 2y + 5) \times (-3x) \\ &= x \times (-3x) - 2y \times (-3x) + 5 \times (-3x) \\ &= -3x^2 + 6xy - 15x\end{aligned}$$

$$\begin{aligned}(3) \quad & 2x(x + 3) + x(2 - x) \\ &= 2x^2 + 6x + 2x - x^2 \\ &= x^2 + 8x\end{aligned}$$

$$\begin{aligned}(4) \quad & (4xy^2 + 6x^2y) \div 2x \\ &= (4xy^2 + 6x^2y) \times \frac{1}{2x} \\ &= \frac{4xy^2}{2x} + \frac{6x^2y}{2x} \\ &= 2y^2 + 3xy\end{aligned}$$

$$\begin{aligned}(5) \quad & (4a^2 + ab) \div \frac{1}{2}a \\ &= (4a^2 + ab) \times \frac{2}{a} \\ &= \frac{4a^2 \times 2}{a} + \frac{ab \times 2}{a} \\ &= 8a + 2b\end{aligned}$$

2. 次の式を展開しなさい。

$$\begin{aligned}(1) \quad & (x + 3)(y + 5) \\ &= xy + 5x + 3y + 15\end{aligned}$$

$$\begin{aligned}(2) \quad & (a + 7)(b - 2) \\ &= ab - 2a + 7a - 14\end{aligned}$$

$$\begin{aligned}(3) \quad & (3x + 2)(x - 4) \\ &= 3x^2 - 12x + 2x - 8 \\ &= 3x^2 - 10x - 8\end{aligned}$$

$$\begin{aligned}(4) \quad & (a + 3)(a + 2b - 4) \\ &= a(a + 2b - 4) + 3(a + 2b - 4) \\ &= a^2 + 2ab - 4a + 3a + 6b - 12 \\ &= a^2 + 2ab - a + 6b - 12\end{aligned}$$

3. 次の式を展開しなさい。

$$\begin{aligned}(1) \quad & (x + 2)(x + 7) \\ &= x^2 + (2 + 7)x + 2 \times 7 \\ &= x^2 + 9x + 14\end{aligned}$$

$$\begin{aligned}(2) \quad & (x + 3)(x - 4) \\ &= (x + 3)\{x + (-4)\} \\ &= x^2 + \{3 + (-4)\}x + 3 \times (-4) \\ &= x^2 - x - 12\end{aligned}$$

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

$$\begin{aligned}(4) \quad & (x - 8)^2 \\ &= x^2 - 2 \times 8 \times x + 8^2 \\ &= x^2 - 16x + 64\end{aligned}$$

$$\begin{aligned}(5) \quad & (x + 6)(x - 6) \\ &= x^2 - 6^2 \\ &= x^2 - 36\end{aligned}$$

$$\begin{aligned}(6) \quad & (2x - 3y)^2 \\ &= (2x)^2 - 2 \times 3y \times 2x + (3y)^2 \\ &= 4x^2 - 12xy + 9y^2\end{aligned}$$

$$\begin{aligned}(7) \quad & a + b = X \text{ とおくと} \\ & (a + b - 2)(a + b + 2) \\ &= (X - 2)(X + 2) \\ &= X^2 - 4 \\ &= (a + b)^2 - 4 \\ &= a^2 + 2ab + b^2 - 4\end{aligned}$$

$$\begin{aligned}(8) \quad & 2(x + 5)^2 - (x + 3)(x - 3) \\ &= 2(x^2 + 10x + 25) - (x^2 - 9) \\ &= 2x^2 + 20x + 50 - x^2 + 9 \\ &= x^2 + 20x + 59\end{aligned}$$

4. 次の式を因数分解しなさい。

$$(1) \quad ma + mb + mc \\ = m(a + b + c)$$

$$(2) \quad x^2 + 2xy \\ = x(x + 2y)$$

$$(3) \quad 3ax - 6ay \\ = 3a(x - 2y)$$

$$(4) \quad 4ab + 2a \\ = 2a(2b + 1)$$

$$(5) \quad x^2 + 5x + 6 \\ = (x + 2)(x + 3)$$

$$(6) \quad x^2 + x - 6 \\ = (x - 2)(x + 3)$$

$$(7) \quad x^2 + 10x + 25 \\ = x^2 + 2 \times 5 \times x + 5^2 \\ = (x + 5)^2$$

$$(8) \quad x^2 - 25 \\ = x^2 - 5^2 \\ = (x + 5)(x - 5)$$

$$(9) \quad 2x^2 + 4x - 16 \\ = 2(x^2 + 2x - 8) \\ = 2(x - 2)(x + 4)$$

$$(10) \quad 4x^2 + 4x + 1 \\ = (2x)^2 + 2 \times 1 \times 2x + 1^2 \\ = (2x + 1)^2$$

$$(11) \quad 9x^2 - 4y^2 \\ = (3x)^2 - (2y)^2 \\ = (3x + 2y)(3x - 2y)$$

$$(12) \quad x + y = A \text{ とおくと} \\ a(x + y) - b(x + y) \\ = aA - bA \\ = (a - b)A \\ = (a - b)(x + y)$$

$$(13) \quad x + y = A \text{ とおくと} \\ (x + y)^2 + 3(x + y) + 2 \\ = A^2 + 3A + 2 \\ = (A + 1)(A + 2) \\ = (x + y + 1)(x + y + 2)$$