

[学習プリント11]

練習18 次の式を因数分解せよ。

$$(1) \quad 3ab - 2ac \quad (2) \quad 12x^3 - 8x^2y$$

$$3 \times \boxed{a} \times b \quad 2 \times \boxed{a} \times c \quad 2 \times 2 \times 3 \times \boxed{x \times x} \times x$$

$$= a(3b - 2c) \quad = 4x^2(3x - 2y)$$

$$(3) \quad 3a^2x + 6ax^2 + ax \rightarrow 1 \times \boxed{a \times x}$$

$$3 \times a \times \boxed{a \times x} \quad 3 \times 2 \times \boxed{a \times x} \times x$$

$$= ax(3a + 6x + 1)$$

練習19 次の式を因数分解せよ。

$$(1) \quad (a+b)c + d(a+b)$$

$$= (a+b)(c+d)$$

$$(2) \quad (a-2b)x + (2b-a)y$$

$$= (a-2b)x - (a-2b)y$$

$$= (a-2b)(x-y)$$

練習20 次の式を因数分解せよ。

$$(1) \quad x^2 + 10x + 25 \quad (2) \quad x^2 - 12x + 36$$

$$= x^2 + 2 \cdot x \cdot 5 + 5^2 \quad = x^2 - 2 \cdot x \cdot 6 + 6^2$$

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

$$(3) \quad x^2 + 6xy + 9y^2 \quad (4) \quad 4a^2 - 4ab + b^2$$

$$= x^2 + 2 \cdot x \cdot 3y + (3y)^2 \quad = (2a)^2 - 2 \cdot 2a \cdot b + b^2$$

$$= (x+3y)^2 \quad = (2a-b)^2$$

$$(5) \quad x^2 - 9y^2 \quad (6) \quad 16a^2 - 25b^2$$

$$= x^2 - (3y)^2 \quad = (4a)^2 - (5b)^2$$

$$= (x+3y)(x-3y) \quad = (4a+5b)(4a-5b)$$

練習21 次の式を因数分解せよ。

$$(1) \quad x^2 + 8x + 12 \quad (2) \quad x^2 - 7x + 12$$

$$\begin{array}{c} \text{たして } 8 \\ \text{かけて } 12 \end{array} \quad \begin{array}{c} \text{たして } -7 \\ \text{かけて } 12 \end{array}$$

$$= (x+2)(x+6) \quad = (x-3)(x-4)$$

$$(3) \quad x^2 + 2x - 8 \quad (4) \quad x^2 - 5x - 6$$

$$\begin{array}{c} \text{たして } 2 \\ \text{かけて } -8 \end{array} \quad \begin{array}{c} \text{たして } -5 \\ \text{かけて } -6 \end{array}$$

$$= (x-2)(x+4) \quad = (x+1)(x-6)$$

$$(5) \quad a^2 - 13a + 36 \quad (6) \quad y^2 - y - 20$$

$$\begin{array}{c} \text{たして } -13 \\ \text{かけて } 36 \end{array} \quad \begin{array}{c} \text{たして } -1 \\ \text{かけて } -20 \end{array}$$

$$= (a-4)(a-9) \quad = (y+4)(y-5)$$

練習22 次の式を因数分解せよ。

$$(1) \quad x^2 + 5xy + 6y^2 \quad (2) \quad x^2 - 6xy + 8y^2$$

$$\begin{array}{c} \text{たして } 5y \\ \text{かけて } 6y^2 \end{array} \quad \begin{array}{c} \text{たして } -6y \\ \text{かけて } 8y^2 \end{array}$$

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

$$(3) \quad x^2 + 7ax - 18a^2 \quad (4) \quad x^2 - ax - 12a^2$$

$$\begin{array}{c} \text{たして } 7a \\ \text{かけて } -18a^2 \end{array} \quad \begin{array}{c} \text{たして } -1a \\ \text{かけて } -12a^2 \end{array}$$

$$= (x-2a)(x+9a) \quad = (x+3a)(x-4a)$$

[学習プリント12]

練習23 次の式を因数分解せよ。

$$(1) \quad 3x^2 + 7x + 2 = (x+2)(3x+1)$$

$$\begin{array}{c} (1x \quad +2) \rightarrow 6 \\ (3x \quad +1) \rightarrow \frac{1}{7} (+) \end{array} \quad \begin{array}{c} \times \rightarrow \\ \times \rightarrow \end{array}$$

$$(2) \quad 2x^2 + 9x + 10 = (x+2)(2x+5)$$

$$\begin{array}{c} (1x \quad +2) \rightarrow 4 \\ (2x \quad +5) \rightarrow \frac{5}{9} (+) \end{array} \quad \begin{array}{c} \times \rightarrow \\ \times \rightarrow \end{array}$$

$$(3) \quad 2x^2 - 7x + 6 = (x-2)(2x-3)$$

$$\begin{array}{c} (1x \quad -2) \rightarrow -4 \\ (2x \quad -3) \rightarrow \frac{-3}{-7} (+) \end{array} \quad \begin{array}{c} \times \rightarrow \\ \times \rightarrow \end{array}$$

$$(4) \quad 4x^2 + 8x - 21 = (2x+7)(2x-3)$$

$$\begin{array}{c} 2 \quad 7 \rightarrow 14 \\ 2 \quad -3 \rightarrow \frac{-6}{8} (+) \end{array} \quad \begin{array}{c} \times \rightarrow \\ \times \rightarrow \end{array}$$

$$(5) \quad 6x^2 - 13x - 15 = (x-3)(6x+5)$$

$$\begin{array}{c} 1 \quad -3 \rightarrow -18 \\ 6 \quad 5 \rightarrow \frac{5}{-13} (+) \end{array} \quad \begin{array}{c} \times \rightarrow \\ \times \rightarrow \end{array}$$

$$(6) \quad 2y^2 - 11y + 12 = (y-4)(2y-3)$$

$$\begin{array}{c} 1 \quad -4 \rightarrow -8 \\ 2 \quad -3 \rightarrow \frac{-3}{-11} (+) \end{array} \quad \begin{array}{c} \times \rightarrow \\ \times \rightarrow \end{array}$$

(7) $3x^2 + 5ax - 2a^2 = (x + 2a)(3x - a)$

$$\begin{array}{rcl} 1 & \nearrow & 2a \longrightarrow 6a \\ 3 & \searrow & -a \longrightarrow -a \quad (+) \\ & & \underline{5a} \end{array} \quad \begin{array}{rcl} & \nearrow & \\ & \searrow & \longrightarrow \quad (+) \end{array}$$

(8) $6x^2 - 7ax - 3a^2 = (2x - 3a)(3x + a)$

$$\begin{array}{rcl} 2 & \nearrow & -3a \longrightarrow -9a \\ 3 & \searrow & a \longrightarrow 2a \quad (+) \\ & & \underline{-7a} \end{array} \quad \begin{array}{rcl} & \nearrow & \\ & \searrow & \longrightarrow \quad (+) \end{array}$$

(9) $4x^2 + 13xy - 35y^2 = (x - 5y)(4x + 7y)$

$$\begin{array}{rcl} 1 & \nearrow & 5y \longrightarrow 20y \\ 4 & \searrow & -7y \longrightarrow -7y \quad (+) \\ & & \underline{13y} \end{array} \quad \begin{array}{rcl} & \nearrow & \\ & \searrow & \longrightarrow \quad (+) \end{array}$$

演習 次の式を因数分解せよ。

(1) $8y^2 + 14y - 15 = (2y + 5)(4y - 3)$

$$\begin{array}{rcl} 2 & \nearrow & 5 \longrightarrow 20 \\ 4 & \searrow & -3 \longrightarrow -6 \quad (+) \\ & & \underline{14} \end{array} \quad \begin{array}{rcl} & \nearrow & \\ & \searrow & \longrightarrow \quad (+) \end{array}$$

(2) $6y^2 + 17y + 12 = (2y + 3)(3y + 4)$

$$\begin{array}{rcl} 2 & \nearrow & 3 \longrightarrow 9 \\ 3 & \searrow & 4 \longrightarrow 8 \quad (+) \\ & & \underline{17} \end{array} \quad \begin{array}{rcl} & \nearrow & \\ & \searrow & \longrightarrow \quad (+) \end{array}$$

(3) $12a^2 - 23ab + 10b^2 = (3a - 2b)(4a - 5b)$

$$\begin{array}{rcl} 3 & \nearrow & -2b \longrightarrow -8b \\ 4 & \searrow & -5b \longrightarrow -15b \quad (+) \\ & & \underline{-23b} \end{array} \quad \begin{array}{rcl} & \nearrow & \\ & \searrow & \longrightarrow \quad (+) \end{array}$$