

1章 1節 式の計算

展開の工夫

例15

$$\begin{aligned}(a + b + c)(a - b + c) &= (\underline{a + c} + b)(\underline{a + c} - b) \\ &\quad \text{同じ} \\ &= (\underline{a + c})^2 - b^2 = \dots\end{aligned}$$

問15

$$(3) \quad (x - y - z)(x + y - z) = \{(x - z) - y\}\{(x - z) + y\} = \dots$$

$$(4) \quad (x + \underline{y - z})(x - \underline{y + z}) = \{x + (y - z)\}\{x - (y - z)\} = \dots$$

似てる

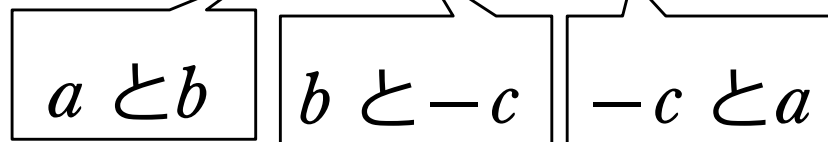
$$-y + z \rightarrow -(y - z)$$

例題1

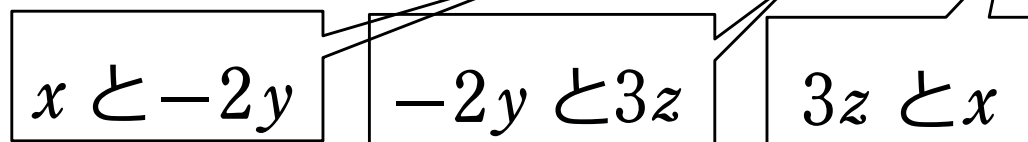
$$(a + b + c)^2 = a^2 + b^2 + c^2 + \overbrace{2ab + 2bc + 2ca}$$

問16

$$(1) \quad (a + b - c)^2 = a^2 + b^2 + c^2 + 2ab - 2bc - 2ca$$



$$(3) \quad (x - 2y + 3z)^2 = x^2 + 4y^2 + 9z^2 - 4xy - 12yz + 6zx$$



例題2

$$\begin{aligned} (1) \quad & (x+2)(x+3)(x-2)(x-3) \\ &= \{(x+2)(x-2)\}\{(x+3)(x-3)\} \\ & \quad \boxed{(x^2-4)} \quad \boxed{(x^2-9)} \end{aligned}$$

または

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

または…

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

$(x^2 - x - 6)$

$(x^2 + x - 6)$

問17

(2) $(x+1)(x+2)(x+3)(x+4)$

1 と 2 と 3 と 4
 2 個ずつのペアで
 「同じ数」を作る？

$$= \{(x+1)(x+4)\}\{(x+2)(x+3)\} = \dots$$

$(x^2 + 5x + 4)$

$(x^2 + 5x + 6)$

問18

$$\begin{aligned}(a^2 + 1)(a + 1)(a - 1) &= (a^2 + 1)(a^2 - 1) \\ &= a^4 - 1\end{aligned}$$

$a^4 - 1$ を「因数分解」すると

$$= (a^2 + 1)(a^2 - 1) = (a^2 + 1)(a + 1)(a - 1)$$