

共通因数でくくってから公式

例題 次の式を因数分解せよ。

(1) $5x^2 + 15x + 10$

(2) $-3x^3y + 18x^2y - 27xy$

(3) $4x^2 - 36$

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練習 次の式を因数分解せよ。

(1) $4x^2 - 12x + 8$

(4) $4a^3b - 16ab^3$

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(2) $ab^2 - 4a$

(5) $2a^3b + 4a^2b^2 + 2ab^3$

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(3) $-9a^2 + 6ab - b^2$

(6) $2x^3y - 6x^2y^2 - 56xy^3$

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例題 次の式を因数分解せよ。

(1) $5x^2 + 15x + 10$

$$\begin{aligned} &\star \\ 5x^2 + 15x + 10 &= 5(x^2 + 3x + 2) \\ &= 5(x+2)(x+1) \end{aligned}$$

答 $5(x+2)(x+1)$

(2) $-3x^3y + 18x^2y - 27xy$

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

答 $-3xy(x-3)^2$

(3) $4x^2 - 36$

$$\begin{aligned} &\star \\ 4x^2 - 36 &= 4(x^2 - 9) \\ &= 4(x+3)(x-3) \end{aligned}$$

答 $4(x+3)(x-3)$

練習 次の式を因数分解せよ。

(1) $4x^2 - 12x + 8$

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

答 $4(x-1)(x-2)$

(4) $4a^3b - 16ab^3$

$$\begin{aligned} &\star \\ 4a^3b - 16ab^3 &= 4ab(a^2 - 4b^2) \\ &= 4ab(a+2b)(a-2b) \end{aligned}$$

答 $4ab(a+2b)(a-2b)$

(2) $ab^2 - 4a$

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

答 $a(b+2)(b-2)$

(5) $2a^3b + 4a^2b^2 + 2ab^3$

$$\begin{aligned} &\star \\ 2a^3b + 4a^2b^2 + 2ab^3 &= 2ab(a^2 + 2ab + b^2) \\ &= 2ab(a+b)^2 \end{aligned}$$

答 $2ab(a+b)^2$

(3) $-9a^2 + 6ab - b^2$

$$\begin{aligned} &\star \\ -9a^2 + 6ab - b^2 &= -(9a^2 - 6ab + b^2) \\ &= -(3a-b)^2 \end{aligned}$$

答 $-(3a-b)^2$

(6) $2x^3y - 6x^2y^2 - 56xy^3$

$$\begin{aligned} &\star \\ 2x^3y - 6x^2y^2 - 56xy^3 &= 2xy(x^2 - 3xy - 28y^2) \\ &= 2xy(x+4y)(x-7y) \end{aligned}$$

答 $2xy(x+4y)(x-7y)$