

## 展開と因数分解 [乗法公式を活用した展開(1)]

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<演習問題>

次の式を展開せよ。

$$(1) \quad (2x + 1)^2$$

$$(10) \quad (3x + y)(3x - y)$$

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

$$(11) \quad (2x + 5y)(2x - 5y)$$

$$(3) \quad (2x - 5)^2$$

$$(12) \quad (2x - y)(2x + y)$$

$$(4) \quad (3x - 2)^2$$

$$(13) \quad (3x - 4y)(3x + 4y)$$

$$(5) \quad (5x - 4)^2$$

$$(14) \quad (2x + 1)(2x + 5)$$

$$(6) \quad (3x - 2y)^2$$

$$(15) \quad (3x + 2)(3x - 1)$$

$$(7) \quad (2x + 5y)^2$$

$$(16) \quad (5x - 2)(5x - 1)$$

$$(8) \quad (2x + 3)(2x - 3)$$

$$(17) \quad (2x + 1)(2x - 6)$$

$$(9) \quad (5x - 6)(5x + 6)$$

$$(18) \quad (-2x + 5)(-2x + 4)$$

# 展開と因数分解 [乗法公式を活用した展開(1)]

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次の式を展開せよ。

$$(1) \quad (2x + 1)^2$$

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

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

$$\begin{aligned} (3x + 1)^2 &= (3x)^2 + 2 \times 1 \times 3x + 1^2 \\ &= 9x^2 + 6x + 1 \end{aligned}$$

$$(3) \quad (2x - 5)^2$$

$$\begin{aligned} (2x - 5)^2 &= (2x)^2 - 2 \times 5 \times 2x + 5^2 \\ &= 4x^2 - 20x + 25 \end{aligned}$$

$$(4) \quad (3x - 2)^2$$

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

$$(5) \quad (5x - 4)^2$$

$$\begin{aligned} (5x - 4)^2 &= (5x)^2 - 2 \times 4 \times 5x + 4^2 \\ &= 25x^2 - 40x + 16 \end{aligned}$$

$$(6) \quad (3x - 2y)^2$$

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

$$(7) \quad (2x + 5y)^2$$

$$\begin{aligned} (2x + 5y)^2 &= (2x)^2 + 2 \times 2x \times 5y + (5y)^2 \\ &= 4x^2 + 20xy + 25y^2 \end{aligned}$$

$$(8) \quad (2x + 3)(2x - 3)$$

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

$$(9) \quad (5x - 6)(5x + 6)$$

$$\begin{aligned} (5x - 6)(5x + 6) &= (5x)^2 - 6^2 \\ &= 25x^2 - 36 \end{aligned}$$

$$(10) \quad (3x + y)(3x - y)$$

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

$$(11) \quad (2x + 5y)(2x - 5y)$$

$$\begin{aligned} (2x + 5y)(2x - 5y) &= (2x)^2 - (5y)^2 \\ &= 4x^2 - 25y^2 \end{aligned}$$

$$(12) \quad (2x - y)(2x + y)$$

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

$$(13) \quad (3x - 4y)(3x + 4y)$$

$$\begin{aligned} (3x - 4y)(3x + 4y) &= (3x)^2 - (4y)^2 \\ &= 9x^2 - 16y^2 \end{aligned}$$

$$(14) \quad (2x + 1)(2x + 5)$$

$$\begin{aligned} (2x + 1)(2x + 5) &= (2x)^2 + (1 + 5) \times 2x + 1 \times 5 \\ &= 4x^2 + 12x + 5 \end{aligned}$$

$$(15) \quad (3x + 2)(3x - 1)$$

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

$$(16) \quad (5x - 2)(5x - 1)$$

$$\begin{aligned} (5x - 2)(5x - 1) &= (5x)^2 + (-2 - 1) \times 5x + (-2) \times (-1) \\ &= 25x^2 - 15x + 2 \end{aligned}$$

$$(17) \quad (2x + 1)(2x - 6)$$

$$\begin{aligned} (2x + 1)(2x - 6) &= (2x)^2 + (1 - 6) \times 2x + 1 \times (-6) \\ &= 4x^2 - 10x - 6 \end{aligned}$$

$$(18) \quad (-2x + 5)(-2x + 4)$$

$$\begin{aligned} (-2x + 5)(-2x + 4) &= (-2x)^2 + (5 + 4) \times (-2x) + 5 \times 4 \\ &= 4x^2 - 18x + 20 \end{aligned}$$