

展開と因数分解 [乗法公式を利用した展開 (2)]

<演習問題>

次の式を展開せよ。

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

(2) $(x + 3)^2$

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

(4) $(x - 2)^2$

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

(6) $(x - 1)^2$

(7) $(x + 1)(x - 1)$

(8) $(x + 7)(x - 7)$

(9) $(x - 6)(x + 6)$

(10) $(2 + x)^2$

(11) $(8 + x)^2$

(12) $(x + 10)^2$

(13) $(x - 12)^2$

(14) $(9 - x)^2$

(15) $(6 - x)^2$

(16) $(2 + x)(2 - x)$

(17) $(3 + x)(3 - x)$

(18) $(2 + x)(-x + 2)$

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次の式を展開せよ。

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

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

(2) $(x + 3)^2$

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

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

$$\begin{aligned}(x + 5)^2 &= x^2 + 2 \times 5 \times x + 5^2 \\ &= x^2 + 10x + 25\end{aligned}$$

(4) $(x - 2)^2$

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

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

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

(6) $(x - 1)^2$

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

(7) $(x + 1)(x - 1)$

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

(8) $(x + 7)(x - 7)$

$$\begin{aligned}(x + 7)(x - 7) &= x^2 - 7^2 \\ &= x^2 - 49\end{aligned}$$

(9) $(x - 6)(x + 6)$

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

(10) $(2 + x)^2$

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

(11) $(8 + x)^2$

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

(12) $(x + 10)^2$

$$\begin{aligned}(x + 10)^2 &= x^2 + 2 \times 10 \times x + 10^2 \\ &= x^2 + 20x + 100\end{aligned}$$

(13) $(x - 12)^2$

$$\begin{aligned}(x - 12)^2 &= x^2 - 2 \times 12 \times x + 12^2 \\ &= x^2 - 24x + 144\end{aligned}$$

(14) $(9 - x)^2$

$$\begin{aligned}(9 - x)^2 &= 9^2 - 2 \times 9 \times x + x^2 \\ &= x^2 - 18x + 81\end{aligned}$$

(15) $(6 - x)^2$

$$\begin{aligned}(6 - x)^2 &= x^2 - 2 \times 6 \times x + x^2 \\ &= x^2 - 12x + 36\end{aligned}$$

(16) $(2 + x)(2 - x)$

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

(17) $(3 + x)(3 - x)$

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

(18) $(2 + x)(-x + 2)$

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