

展開と因数分解 [乗法公式を利用した因数分解(2)]

<演習問題>

次の式を因数分解せよ。

(1) $x^2 + 14x + 49$

(2) $x^2 + 6x + 9$

(3) $x^2 + 10x + 25$

(4) $x^2 - 6x + 9$

(5) $x^2 - 8x + 16$

(6) $x^2 - 20x + 100$

(7) $x^2 - 1$

(8) $x^2 - 16$

(9) $x^2 - 36$

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

(11) $x^2 + 16x + 64$

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

(13) $x^2 - 24x + 144$

(14) $x^2 - 18x + 81$

(15) $x^2 - 12x + 36$

(16) $4 - x^2$

(17) $9 - x^2$

(18) $100 - x^2$

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次の式を因数分解せよ。

(1) $x^2 + 14x + 49$

$$\begin{aligned}x^2 + 14x + 49 &= x^2 + 2 \times 7 \times x + 7^2 \\ &= (x + 7)^2\end{aligned}$$

(2) $x^2 + 6x + 9$

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

(3) $x^2 + 10x + 25$

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

(4) $x^2 - 6x + 9$

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

(5) $x^2 - 8x + 16$

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

(6) $x^2 - 20x + 100$

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

(7) $x^2 - 1$

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

(8) $x^2 - 16$

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

(9) $x^2 - 36$

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

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

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

(11) $x^2 + 16x + 64$

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

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

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

(13) $x^2 - 24x + 144$

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

(14) $x^2 - 18x + 81$

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

(15) $x^2 - 12x + 36$

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

(16) $4 - x^2$

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

(17) $9 - x^2$

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

(18) $100 - x^2$

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