

平方に変形する解き方

NO.2

名前

/5 点

◆次の2次方程式を平方の形にして解きなさい。

(1) $x^2 + 2x - 7 = 0$

(2) $x^2 - 4x - 11 = 0$

(3) $x^2 + 6x - 1 = 0$

(4) $x^2 + x - 4 = 0$

(5) $x^2 - 3x - 6 = 0$

解答

$$\begin{aligned}
 (1) \quad x^2 + 2x &= 7 \\
 x^2 + 2x + 1 &= 7 + 1 \\
 (x + 1)^2 &= 8 \\
 x + 1 &= \pm \sqrt{8} \\
 x &= -1 \pm 2\sqrt{2}
 \end{aligned}$$

$$\begin{aligned}
 (2) \quad x^2 - 4x &= 11 \\
 x^2 - 4x + 4 &= 11 + 4 \\
 (x - 2)^2 &= 15 \\
 x - 2 &= \pm \sqrt{15} \\
 x &= 2 \pm \sqrt{15}
 \end{aligned}$$

$$\begin{aligned}
 (3) \quad x^2 + 6x &= 1 \\
 x^2 + 6x + 9 &= 1 + 9 \\
 (x + 3)^2 &= 10 \\
 x + 3 &= \pm \sqrt{10} \\
 x &= -3 \pm \sqrt{10}
 \end{aligned}$$

$$\begin{aligned}
 (4) \quad x^2 + x &= 4 \\
 x^2 + x + \frac{1}{4} &= 4 + \frac{1}{4} \\
 \left(x + \frac{1}{2}\right)^2 &= \frac{17}{4} \\
 x + \frac{1}{2} &= \pm \frac{\sqrt{17}}{2} \\
 x &= -\frac{1}{2} \pm \frac{\sqrt{17}}{2}
 \end{aligned}$$

$$\begin{aligned}
 (5) \quad x^2 - 3x &= 6 \\
 x^2 - 3x + \frac{9}{4} &= 6 + \frac{9}{4} \\
 \left(x - \frac{3}{2}\right)^2 &= \frac{33}{4} \\
 x - \frac{3}{2} &= \pm \frac{\sqrt{33}}{2} \\
 x &= \frac{3}{2} \pm \frac{\sqrt{33}}{2}
 \end{aligned}$$