

2次方程式

例題 次の2次方程式を解け。

(1) $x^2 = 9$

答

(2) $2x^2 = 5$

答

(3) $3x^2 - 18 = 0$

答

練習 次の2次方程式を解け。

(1) $x^2 = 5$

答

(4) $x^2 = 13$

答

(2) $x^2 = 4$

答

(5) $x^2 = 20$

答

(3) $x^2 = 8$

答

(6) $x^2 = 36$

答

2次方程式

例題 次の2次方程式を解け。

(1) $(x-1)^2=9$

答

(2) $2(x+5)^2=12$

答

(3) $2(x+5)^2-32=0$

答

練習 次の2次方程式を解け。

(1) $(x+1)^2=36$

答

(2) $(x+5)^2-64=0$

答

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

答

(4) $(x-3)^2=4$

答

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

答

(6) $(x-2)^2-9=0$

答

2次方程式

例題 次の2次方程式を解け。

(1) $x^2 + 3x - 10 = 0$

答

(2) $x^2 + 10x + 25 = 0$

答

(3) $x^2 - 16 = 0$

答

練習 次の2次方程式を解け。

(1) $x^2 + 4x + 3 = 0$

答

(4) $x^2 - 8x + 16 = 0$

答

(2) $x^2 - 8x + 7 = 0$

答

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

答

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

答

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

答

2次方程式

例題 次の2次方程式を解け。

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

答

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

答

(3) $9x^2 + 6x + 1 = 0$

答

練習 次の2次方程式を解け。

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

答

(4) $x^2 + 6x = 0$

答

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

答

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

答

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

答

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

答

2次方程式

例題 次の2次方程式を解け。

(1) $2x^2 - 10x - 12 = 0$

答

(2) $-3x^2 + 27x = 0$

答

練習 次の2次方程式を解け。

(1) $2x^2 - 14x + 20 = 0$

答

(4) $3x^2 + 6x + 3 = 0$

答

(2) $3x^2 + 21x = 0$

答

(5) $4x^2 - 32x = 0$

答

(3) $2x^2 - 10x = 0$

答

(6) $-x^2 + 14x - 49 = 0$

答

2次方程式

例題 次の2次方程式を解け。

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

答

(2) $\frac{1}{6}x^2 - \frac{1}{3}x - \frac{1}{2} = 0$

答

練習 次の2次方程式を解け。

(1) $(x+5)(x-2) = x-2$

答

(3) $\frac{1}{3}x^2 - x + \frac{2}{3} = 0$

答

(2) $3(x^2-8) = (x-8)(x+2)$

答

(4) $\frac{1}{3}x^2 = \frac{1}{6}(2x+12)$

答

2次方程式

例題 次の2次方程式を解け。

(1) $x^2 = 9$

★

$$x^2 = 9$$
$$x = \pm\sqrt{9} = \pm 3$$

答 $x = \pm 3$

(2) $2x^2 = 5$

★

$$2x^2 = 5$$
$$x^2 = \frac{5}{2}$$
$$x = \pm\sqrt{\frac{5}{2}} = \pm\frac{\sqrt{5}}{\sqrt{2}} = \pm\frac{\sqrt{10}}{2}$$

答 $x = \pm\frac{\sqrt{10}}{2}$

(3) $3x^2 - 18 = 0$

★

$$3x^2 - 18 = 0$$
$$3x^2 = 18$$
$$x^2 = 6$$
$$x = \pm\sqrt{6}$$

答 $x = \pm\sqrt{6}$

練習 次の2次方程式を解け。

(1) $x^2 = 5$

★

$$x^2 = 5$$
$$x = \pm\sqrt{5}$$

答 $x = \pm\sqrt{5}$

(2) $x^2 = 4$

★

$$x^2 = 4$$
$$x = \pm\sqrt{4} = \pm 2$$

答 $x = \pm 2$

(3) $x^2 = 8$

★

$$x^2 = 8$$
$$x = \pm\sqrt{8} = \pm 2\sqrt{2}$$

答 $x = \pm 2\sqrt{2}$

(4) $x^2 = 13$

★

$$x^2 = 13$$
$$x = \pm\sqrt{13}$$

答 $x = \pm\sqrt{13}$

(5) $x^2 = 20$

★

$$x^2 = 20$$
$$x = \pm\sqrt{20} = \pm 2\sqrt{5}$$

答 $x = \pm 2\sqrt{5}$

(6) $x^2 = 36$

★

$$x^2 = 36$$
$$x = \pm\sqrt{36} = \pm 6$$

答 $x = \pm 6$

2次方程式

例題 次の2次方程式を解け。

(1) $(x-1)^2=9$

★

$$\begin{aligned}(x-1)^2 &= 9 \\ x-1 &= \pm 3 \\ x &= \pm 3 + 1 \\ x &= 4, -2\end{aligned}$$

答 $x=4, -2$

(2) $2(x+5)^2=12$

★

$$\begin{aligned}2(x+5)^2 &= 12 \\ (x+5)^2 &= 6 \\ x+5 &= \pm\sqrt{6} \\ x &= \pm\sqrt{6} - 5\end{aligned}$$

答 $x=\pm\sqrt{6}-5$

(3) $2(x+5)^2-32=0$

$$\begin{aligned}2(x+5)^2 - 32 &= 0 \\ 2(x+5)^2 &= 32 \\ (x+5)^2 &= 16 \\ x+5 &= \pm 4 \\ x &= -1, -9\end{aligned}$$

答 $x=-1, -9$

練習 次の2次方程式を解け。

(1) $(x+1)^2=36$

★

$$\begin{aligned}(x+1)^2 &= 36 \\ x+1 &= \pm 6 \\ x &= 5, -7\end{aligned}$$

答 $x=5, -7$

(2) $(x+5)^2-64=0$

★

$$\begin{aligned}(x+5)^2 - 64 &= 0 \\ (x+5)^2 &= 64 \\ x+5 &= \pm 8 \\ x &= 3, -13\end{aligned}$$

答 $x=3, -13$

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

★

$$\begin{aligned}(x+3)^2 &= 25 \\ x+3 &= \pm 5 \\ x &= 2, -8\end{aligned}$$

答 $x=2, -8$

(4) $(x-3)^2=4$

★

$$\begin{aligned}(x-3)^2 &= 4 \\ x-3 &= \pm 2 \\ x &= 5, 1\end{aligned}$$

答 $x=5, 1$

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

$$\begin{aligned}(x+2)^2 - 4 &= 0 \\ (x+2)^2 &= 4 \\ x+2 &= \pm 2 \\ x &= 0, -4\end{aligned}$$

答 $x=0, -4$

(6) $(x-2)^2-9=0$

★

$$\begin{aligned}(x-2)^2 - 9 &= 0 \\ (x-2)^2 &= 9 \\ x-2 &= \pm 3 \\ x &= 2 \pm 3 \\ x &= 5, -1\end{aligned}$$

答 $x=5, -1$

2次方程式

例題 次の2次方程式を解け。

(1) $x^2 + 3x - 10 = 0$

★

$$\begin{aligned}x^2 + 3x - 10 &= 0 \\(x-2)(x+5) &= 0 \\x &= 2, -5\end{aligned}$$

答 $x=2, -5$

(2) $x^2 + 10x + 25 = 0$

★

$$\begin{aligned}x^2 + 10x + 25 &= 0 \\(x+5)^2 &= 0 \\x &= -5\end{aligned}$$

答 $x=-5$

(3) $x^2 - 16 = 0$

★

$$\begin{aligned}x^2 - 16 &= 0 \\(x+4)(x-4) &= 0 \\x &= -4, 4\end{aligned}$$

答 $x=\pm 4$

練習 次の2次方程式を解け。

(1) $x^2 + 4x + 3 = 0$

★

$$\begin{aligned}x^2 + 4x + 3 &= 0 \\(x+1)(x+3) &= 0 \\x &= -1, -3\end{aligned}$$

答 $x=-1, -3$

(2) $x^2 - 8x + 7 = 0$

★

$$\begin{aligned}x^2 - 8x + 7 &= 0 \\(x-7)(x-1) &= 0 \\x &= 7, 1\end{aligned}$$

答 $x=7, 1$

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

★

$$\begin{aligned}x^2 - 2x + 1 &= 0 \\(x-1)^2 &= 0 \\x &= 1\end{aligned}$$

答 $x=1$

(4) $x^2 - 8x + 16 = 0$

★

$$\begin{aligned}x^2 - 8x + 16 &= 0 \\(x-4)^2 &= 0 \\x &= 4\end{aligned}$$

答 $x=4$

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

★

$$\begin{aligned}x^2 - 4 &= 0 \\(x+2)(x-2) &= 0 \\x &= -2, 2\end{aligned}$$

答 $x=\pm 2$

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

★

$$\begin{aligned}x^2 - 1 &= 0 \\(x+1)(x-1) &= 0 \\x &= -1, 1\end{aligned}$$

答 $x=\pm 1$

2次方程式

例題 次の2次方程式を解け。

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

★

$$\begin{aligned}x^2 - 2x &= 0 \\ x(x-2) &= 0 \\ x &= 0, 2\end{aligned}$$

答 $x=0, 2$

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

★

$$\begin{aligned}3x^2 - 5x &= 0 \\ x(3x-5) &= 0 \\ x &= 0, \frac{5}{3}\end{aligned}$$

答 $x=0, \frac{5}{3}$

(3) $9x^2 + 6x + 1 = 0$

★

$$\begin{aligned}9x^2 + 6x + 1 &= 0 \\ (3x+1)^2 &= 0 \\ x &= -\frac{1}{3}\end{aligned}$$

答 $x=-\frac{1}{3}$

練習 次の2次方程式を解け。

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

★

$$\begin{aligned}x^2 + 4x &= 0 \\ x(x+4) &= 0 \\ x &= 0, -4\end{aligned}$$

答 $x=0, -4$

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

★

$$\begin{aligned}x^2 - 3x &= 0 \\ x(x-3) &= 0 \\ x &= 0, 3\end{aligned}$$

答 $x=0, 3$

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

★

$$\begin{aligned}x^2 - 5x &= 0 \\ x(x-5) &= 0 \\ x &= 0, 5\end{aligned}$$

答 $x=0, 5$

(4) $x^2 + 6x = 0$

★

$$\begin{aligned}x^2 + 6x &= 0 \\ x(x+6) &= 0 \\ x &= 0, -6\end{aligned}$$

答 $x=0, -6$

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

★

$$\begin{aligned}2x^2 - 5x &= 0 \\ x(2x-5) &= 0 \\ x &= 0, \frac{5}{2}\end{aligned}$$

答 $x=0, \frac{5}{2}$

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

★

$$\begin{aligned}3x^2 + 2x &= 0 \\ x(3x+2) &= 0 \\ x &= 0, -\frac{2}{3}\end{aligned}$$

答 $x=0, -\frac{2}{3}$

2次方程式

例題 次の2次方程式を解け。

(1) $2x^2 - 10x - 12 = 0$

★

$$2x^2 - 10x - 12 = 0$$

$$x^2 - 5x - 6 = 0$$

$$(x-6)(x+1) = 0$$

$$x = 6, -1$$

答

$$x = 6, -1$$

(2) $-3x^2 + 27x = 0$

★

$$-3x^2 + 27x = 0$$

$$x^2 - 9x = 0$$

$$x(x-9) = 0$$

$$x = 0, 9$$

答

$$x = 0, 9$$

練習 次の2次方程式を解け。

(1) $2x^2 - 14x + 20 = 0$

★

$$2x^2 - 14x + 20 = 0$$

$$x^2 - 7x + 10 = 0$$

$$(x-2)(x-5) = 0$$

$$x = 2, 5$$

答

$$x = 2, 5$$

(4) $3x^2 + 6x + 3 = 0$

★

$$3x^2 + 6x + 3 = 0$$

$$x^2 + 2x + 1 = 0$$

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

$$x = -1$$

答

$$x = -1$$

(2) $3x^2 + 21x = 0$

★

$$3x^2 + 21x = 0$$

$$x^2 + 7x = 0$$

$$x(x+7) = 0$$

$$x = 0, -7$$

答

$$x = 0, -7$$

(5) $4x^2 - 32x = 0$

★

$$4x^2 - 32x = 0$$

$$x^2 - 8x = 0$$

$$x(x-8) = 0$$

$$x = 0, 8$$

答

$$x = 0, 8$$

(3) $2x^2 - 10x = 0$

★

$$2x^2 - 10x = 0$$

$$x^2 - 5x = 0$$

$$x(x-5) = 0$$

$$x = 0, 5$$

答

$$x = 0, 5$$

(6) $-x^2 + 14x - 49 = 0$

★

$$-x^2 + 14x - 49 = 0$$

$$x^2 - 14x + 49 = 0$$

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

$$x = 7$$

答

$$x = 7$$

2次方程式

例題 次の2次方程式を解け。

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

★

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

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

$$4x^2 - 4x + 1 - (x^2 + x - 2) - 2x^2 + x = 0$$

$$4x^2 - 4x + 1 - x^2 - x + 2 - 2x^2 + x = 0$$

$$x^2 - 4x + 3 = 0$$

$$(x-3)(x-1) = 0$$

$$x = 3, 1$$

答

$$x = 3, 1$$

(2) $\frac{1}{6}x^2 - \frac{1}{3}x - \frac{1}{2} = 0$

★

$$\frac{1}{6}x^2 - \frac{1}{3}x - \frac{1}{2} = 0 \quad \times 6$$

$$x^2 - 2x - 3 = 0$$

$$(x+1)(x-3) = 0$$

$$x = -1, 3$$

答

$$x = -1, 3$$

練習 次の2次方程式を解け。

(1) $(x+5)(x-2) = x-2$

★

$$(x+5)(x-2) = x-2$$

$$x^2 + 3x - 10 = x - 2$$

$$x^2 + 2x - 8 = 0$$

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

$$x = -4, 2$$

答

$$x = -4, 2$$

(2) $3(x^2-8) = (x-8)(x+2)$

★

$$3(x^2-8) = (x-8)(x+2)$$

$$3x^2 - 24 = x^2 - 6x - 16$$

$$3x^2 - 24 - x^2 + 6x + 16 = 0$$

$$2x^2 + 6x - 8 = 0$$

$$x^2 + 3x - 4 = 0$$

$$(x+4)(x-1) = 0$$

$$x = -4, 1$$

答

$$x = -4, 1$$

(3) $\frac{1}{3}x^2 - x + \frac{2}{3} = 0$

★

$$\frac{1}{3}x^2 - x + \frac{2}{3} = 0 \quad \times 3$$

$$x^2 - 3x + 2 = 0$$

$$(x-1)(x-2) = 0$$

$$x = 1, 2$$

答

$$x = 1, 2$$

(4) $\frac{1}{3}x^2 = \frac{1}{6}(2x+12)$

★

$$\frac{1}{3}x^2 = \frac{1}{6}(2x+12)$$

$$\frac{1}{3}x^2 = \frac{1}{3}x + 2 \quad \times 3$$

$$x^2 = x + 6$$

$$x^2 - x - 6 = 0$$

$$(x+2)(x-3) = 0$$

$$x = -2, 3$$

答

$$x = -2, 3$$