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次の2次方程式を解の公式を使って解きなさい。

(1) $2x^2 + 8x + 6 = 0$

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

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

(4) $2x^2 - x - 7 = 0$

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次の2次方程式を解の公式を使って解きなさい。

(1) $2x^2 + 8x + 6 = 0$

$x = -3, x = -1$

$$\begin{aligned}x &= \frac{-8 \pm \sqrt{8^2 - 4 \times 2 \times 6}}{2 \times 2} \\&= \frac{-8 \pm \sqrt{64 - 48}}{4} \\&= \frac{-8 \pm \sqrt{16}}{4} \\&= \frac{-8 \pm 4}{4}\end{aligned}$$

$x = -3, x = -1$

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

$x = -1 \pm \frac{2\sqrt{3}}{3}$

$$\begin{aligned}x &= \frac{-6 \pm \sqrt{6^2 - 4 \times 3 \times (-1)}}{2 \times 3} \\&= \frac{-6 \pm \sqrt{36 + 12}}{6} \\&= \frac{-6 \pm \sqrt{48}}{6} \\&= \frac{-6 \pm 4\sqrt{3}}{6} \\x &= -1 \pm \frac{2\sqrt{3}}{3}\end{aligned}$$

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

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

$$\begin{aligned}x &= \frac{4 \pm \sqrt{(-4)^2 - 4 \times 1 \times 2}}{2 \times 1} \\&= \frac{4 \pm \sqrt{16 - 8}}{2} \\&= \frac{4 \pm \sqrt{8}}{2} \\&= \frac{4 \pm 2\sqrt{2}}{2}\end{aligned}$$

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

(4) $2x^2 - x - 7 = 0$

$x = \frac{1 \pm \sqrt{57}}{4}$

$$\begin{aligned}x &= \frac{1 \pm \sqrt{(-1)^2 - 4 \times 2 \times (-7)}}{2 \times 2} \\&= \frac{1 \pm \sqrt{1 + 56}}{4} \\x &= \frac{1 \pm \sqrt{57}}{4}\end{aligned}$$