

## 平方根と展開公式

**例題** 次の計算をせよ。

(1)  $(\sqrt{3}+2)(\sqrt{3}-6)$

(2)  $(\sqrt{5}+\sqrt{3})^2$

(3)  $(\sqrt{7}+2)(\sqrt{7}-2)$

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**練習** 次の計算をせよ。

(1)  $(\sqrt{3}+2)(\sqrt{3}+3)$

(3)  $(\sqrt{3}+1)(\sqrt{3}-1)$

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(2)  $(\sqrt{5}+2)^2$

(4)  $(\sqrt{2}+\sqrt{3})^2 - (\sqrt{6}-1)(\sqrt{6}+3)$

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**例題** 次の計算をせよ。

(1)  $(\sqrt{3}+2)(\sqrt{3}-6)$

★

$$\begin{aligned} & (\sqrt{3}+2)(\sqrt{3}-6) \\ & = (\sqrt{3})^2 + (2-6)\times\sqrt{3} + 2\times(-6) \\ & = 3 - 4\sqrt{3} - 12 \\ & = -9 - 4\sqrt{3} \end{aligned}$$

答  $-9 - 4\sqrt{3}$

(2)  $(\sqrt{5}+\sqrt{3})^2$

★

$$\begin{aligned} & (\sqrt{5}+\sqrt{3})^2 \\ & = (\sqrt{5})^2 + 2\times\sqrt{5}\times\sqrt{3} + (\sqrt{3})^2 \\ & = 5 + 2\sqrt{15} + 3 \\ & = 8 + 2\sqrt{15} \end{aligned}$$

答  $8 + 2\sqrt{15}$

(3)  $(\sqrt{7}+2)(\sqrt{7}-2)$

★

$$\begin{aligned} & (\sqrt{7}+2)(\sqrt{7}-2) \\ & = (\sqrt{7})^2 - 2^2 \\ & = 7 - 4 \\ & = 3 \end{aligned}$$

答 3

**練習** 次の計算をせよ。

(1)  $(\sqrt{3}+2)(\sqrt{3}+3)$

★

$$\begin{aligned} & (\sqrt{3}+2)(\sqrt{3}+3) \\ & = (\sqrt{3})^2 + (2+3)\times\sqrt{3} + 2\times3 \\ & = 3 + 5\sqrt{3} + 6 \\ & = 9 + 5\sqrt{3} \end{aligned}$$

答  $9 + 5\sqrt{3}$

(2)  $(\sqrt{5}+2)^2$

★

$$\begin{aligned} & (\sqrt{5}+2)^2 \\ & = (\sqrt{5})^2 + 2\times\sqrt{5}\times2 + 2^2 \\ & = 5 + 4\sqrt{5} + 4 \\ & = 9 + 4\sqrt{5} \end{aligned}$$

答  $9 + 4\sqrt{5}$

(3)  $(\sqrt{3}+1)(\sqrt{3}-1)$

★

$$\begin{aligned} & (\sqrt{3}+1)(\sqrt{3}-1) = (\sqrt{3})^2 - 1^2 \\ & = 3 - 1 \\ & = 2 \end{aligned}$$

答 2

(4)  $(\sqrt{2}+\sqrt{3})^2 - (\sqrt{6}-1)(\sqrt{6}+3)$

★

$$\begin{aligned} & (\sqrt{2}+\sqrt{3})^2 - (\sqrt{6}-1)(\sqrt{6}+3) \\ & = (2+2\sqrt{6}+3) - (6+2\sqrt{6}-3) \\ & = 5+2\sqrt{6}-3-2\sqrt{6} \\ & = 2 \end{aligned}$$

答 2