

平方根・2重根号 No.1

次の式の2重根号を外して簡単にしなさい。

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

(2) $\sqrt{7-2\sqrt{10}}$

(3) $\sqrt{5+\sqrt{24}}$

(4) $\sqrt{5-\sqrt{21}}$

平方根・2重根号 No.1 (解答)

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

$$\begin{aligned}(3) \quad & \sqrt{5+\sqrt{24}} \\ &= \sqrt{5+2\sqrt{6}} \\ &= \sqrt{(3+2)+2\sqrt{3\cdot 2}} \\ &= \sqrt{3}+\sqrt{2}\end{aligned}$$

$$\begin{aligned}(2) \quad & \sqrt{7-2\sqrt{10}} \\ &= \sqrt{(5+2)-2\sqrt{5\cdot 2}} \\ &= \sqrt{5}-\sqrt{2}\end{aligned}$$

$$\begin{aligned}(4) \quad & \sqrt{5-\sqrt{21}} \\ &= \sqrt{\frac{10-2\sqrt{21}}{2}} \\ &= \sqrt{\frac{(7+3)-2\sqrt{7\cdot 3}}{2}} \\ &= \frac{\sqrt{7}-\sqrt{3}}{\sqrt{2}} \\ &= \frac{\sqrt{14}-\sqrt{6}}{2}\end{aligned}$$

平方根・2重根号 No.2

次の式の2重根号を外して簡単にしなさい。

(1) $\sqrt{8-2\sqrt{15}}$

(2) $\sqrt{6-\sqrt{35}}$

(3) $\sqrt{9+2\sqrt{14}}$

(4) $\sqrt{12+\sqrt{64}}$

平方根・2重根号 No.2 (解答)

$$\begin{aligned}(1) \quad & \sqrt{8-2\sqrt{15}} \\ &= \sqrt{(5+3)-2\sqrt{5\cdot 3}} \\ &= \sqrt{5}-\sqrt{3}\end{aligned}$$

$$\begin{aligned}(3) \quad & \sqrt{9+2\sqrt{14}} \\ &= \sqrt{(7+2)+2\sqrt{7\cdot 2}} \\ &= \sqrt{7}+\sqrt{2}\end{aligned}$$

$$\begin{aligned}(2) \quad & \sqrt{6-\sqrt{35}} \\ &= \sqrt{\frac{12-2\sqrt{35}}{2}} \\ &= \frac{\sqrt{(7+5)-2\sqrt{7\cdot 5}}}{\sqrt{2}} \\ &= \frac{\sqrt{7}-\sqrt{5}}{\sqrt{2}} \\ &= \frac{\sqrt{14}-\sqrt{10}}{2}\end{aligned}$$

$$\begin{aligned}(4) \quad & \sqrt{12+\sqrt{80}} \\ &= \sqrt{12+2\sqrt{20}} \\ &= \sqrt{(10+2)+2\sqrt{10\cdot 2}} \\ &= \sqrt{10}+\sqrt{2} \\ &= \sqrt{10}+\sqrt{2}\end{aligned}$$