

平方根 [根号をふくむ式の加法と減法(2)]

<演習問題>

次の計算をせよ。

(1) $\sqrt{2} + \sqrt{8}$

(10) $2\sqrt{24} - \sqrt{7} + 2\sqrt{28}$

(2) $\sqrt{3} - \sqrt{12}$

(11) $4\sqrt{2} - \frac{2}{\sqrt{2}}$

(3) $\sqrt{5} - \sqrt{45}$

(12) $\sqrt{3} - \frac{6}{\sqrt{3}}$

(4) $\sqrt{10} + \sqrt{20} + \sqrt{40}$

(5) $2\sqrt{8} - 3\sqrt{2}$

(13) $\sqrt{28} + \frac{7}{\sqrt{7}}$

(6) $-\sqrt{18} - 3\sqrt{2}$

(7) $5\sqrt{3} - 3\sqrt{12}$

(14) $\sqrt{24} + \sqrt{9} - \frac{6}{\sqrt{6}}$

(8) $2\sqrt{50} - 3\sqrt{32}$

(15) $\sqrt{8} - \sqrt{6} + \frac{1}{2\sqrt{2}}$

(9) $6\sqrt{6} - 2\sqrt{54}$

平方根 [根号をふくむ式の加法と減法(2)]

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次の計算をせよ。

$$(1) \sqrt{2} + \sqrt{8}$$

$$\begin{aligned}\sqrt{2} + \sqrt{8} &= \sqrt{2} + 2\sqrt{2} \\ &= 3\sqrt{2}\end{aligned}$$

$$(2) \sqrt{3} - \sqrt{12}$$

$$\begin{aligned}\sqrt{3} - \sqrt{12} &= \sqrt{3} - 2\sqrt{3} \\ &= -\sqrt{3}\end{aligned}$$

$$(3) \sqrt{5} - \sqrt{45}$$

$$\begin{aligned}\sqrt{5} - \sqrt{45} &= \sqrt{5} - 3\sqrt{5} \\ &= -2\sqrt{5}\end{aligned}$$

$$(4) \sqrt{10} + \sqrt{20} + \sqrt{40}$$

$$\begin{aligned}\sqrt{10} + \sqrt{20} + \sqrt{40} &= \sqrt{10} + 2\sqrt{5} + 2\sqrt{10} \\ &= 2\sqrt{5} + 3\sqrt{10}\end{aligned}$$

$$(5) 2\sqrt{8} - 3\sqrt{2}$$

$$\begin{aligned}2\sqrt{8} - 3\sqrt{2} &= 4\sqrt{2} - 3\sqrt{2} \\ &= \sqrt{2}\end{aligned}$$

$$(6) -\sqrt{18} - 3\sqrt{2}$$

$$\begin{aligned}-\sqrt{18} - 3\sqrt{2} &= -3\sqrt{2} - 3\sqrt{2} \\ &= -6\sqrt{2}\end{aligned}$$

$$(7) 5\sqrt{3} - 3\sqrt{12}$$

$$\begin{aligned}5\sqrt{3} - 3\sqrt{12} &= 5\sqrt{3} - 6\sqrt{3} \\ &= -\sqrt{3}\end{aligned}$$

$$(8) 2\sqrt{50} - 3\sqrt{32}$$

$$\begin{aligned}2\sqrt{50} - 3\sqrt{32} &= 10\sqrt{2} - 12\sqrt{2} \\ &= -2\sqrt{2}\end{aligned}$$

$$(9) 6\sqrt{6} - 2\sqrt{54}$$

$$\begin{aligned}6\sqrt{6} - 2\sqrt{54} &= 6\sqrt{6} - 6\sqrt{6} \\ &= 0\end{aligned}$$

$$(10) 2\sqrt{24} - \sqrt{7} + 2\sqrt{28}$$

$$\begin{aligned}2\sqrt{24} - \sqrt{7} + 2\sqrt{28} &= 4\sqrt{6} - \sqrt{7} + 4\sqrt{7} \\ &= 4\sqrt{6} + 3\sqrt{7}\end{aligned}$$

$$(11) 4\sqrt{2} - \frac{2}{\sqrt{2}}$$

$$\begin{aligned}4\sqrt{2} - \frac{2}{\sqrt{2}} &= 4\sqrt{2} - \frac{2\sqrt{2}}{2} \\ &= 4\sqrt{2} - \sqrt{2} \\ &= 3\sqrt{2}\end{aligned}$$

$$(12) \sqrt{3} - \frac{6}{\sqrt{3}}$$

$$\begin{aligned}\sqrt{3} - \frac{6}{\sqrt{3}} &= \sqrt{3} - \frac{6\sqrt{3}}{3} \\ &= \sqrt{3} - 2\sqrt{3} \\ &= -\sqrt{3}\end{aligned}$$

$$(13) \sqrt{28} + \frac{7}{\sqrt{7}}$$

$$\begin{aligned}\sqrt{28} + \frac{7}{\sqrt{7}} &= 2\sqrt{7} + \frac{7\sqrt{7}}{7} \\ &= 2\sqrt{7} + \sqrt{7} \\ &= 3\sqrt{7}\end{aligned}$$

$$(14) \sqrt{24} + \sqrt{9} - \frac{6}{\sqrt{6}}$$

$$\begin{aligned}\sqrt{24} + \sqrt{9} - \frac{6}{\sqrt{6}} &= 2\sqrt{6} + 3 - \frac{6\sqrt{6}}{6} \\ &= 2\sqrt{6} + 3 - \sqrt{6} \\ &= 3 + \sqrt{6}\end{aligned}$$

$$(15) \sqrt{8} - \sqrt{6} + \frac{1}{2\sqrt{2}}$$

$$\begin{aligned}\sqrt{8} - \sqrt{6} + \frac{1}{2\sqrt{2}} &= 2\sqrt{2} - \sqrt{6} + \frac{\sqrt{2}}{4} \\ &= \frac{9\sqrt{2}}{4} - \sqrt{6}\end{aligned}$$