

反射テスト 平方根 分母の有理化 02

1. 分母を有理化せよ。(S級50秒, A級1分20秒, B級2分, C級3分)

(1) $\frac{1}{\sqrt{5}}$

(2) $-\frac{1}{\sqrt{7}}$

(3) $\frac{5}{\sqrt{5}}$

(4) $-\frac{17}{\sqrt{17}}$

(5) $\frac{1}{\sqrt{18}}$

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

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

(8) $-\left(-\frac{30}{\sqrt{20}}\right)$

(9) $\frac{\sqrt{5}}{\sqrt{14}}$

(10) $-\sqrt{\frac{16}{3}}$

(11) $\frac{3\sqrt{6}}{\sqrt{45}}$

(12) $-\left(-\frac{8\sqrt{2}}{\sqrt{48}}\right)$

2. 分母を有理化せよ。(S級1分, A級1分30秒, B級2分20秒, C級3分30秒)

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

(2) $-\left(-\frac{1}{\sqrt{11}}\right)$

(3) $\frac{2}{\sqrt{2}}$

(4) $-\frac{19}{\sqrt{19}}$

(5) $\frac{1}{\sqrt{12}}$

(6) $-\left(-\frac{4}{\sqrt{8}}\right)$

(7) $\frac{25}{\sqrt{5}}$

(8) $-\frac{16}{\sqrt{8}}$

(9) $\frac{\sqrt{5}}{\sqrt{26}}$

(10) $-\sqrt{\frac{27}{5}}$

(11) $\frac{6\sqrt{10}}{\sqrt{15}}$

(12) $-\left(-\frac{18\sqrt{2}}{\sqrt{120}}\right)$

反射テスト 平方根 分母の有理化 02 解答解説

1. 分母を有理化せよ。(S級 50秒, A級 1分20秒, B級 2分, C級 3分)

$$\begin{aligned} (1) \quad & \frac{1}{\sqrt{5}} \\ &= \frac{1 \times \sqrt{5}}{\sqrt{5} \times \sqrt{5}} \\ &= \frac{\sqrt{5}}{5} \end{aligned}$$

$$\begin{aligned} (2) \quad & -\frac{1}{\sqrt{7}} \\ &= -\frac{1 \times \sqrt{7}}{\sqrt{7} \times \sqrt{7}} \\ &= -\frac{\sqrt{7}}{7} \end{aligned}$$

$$\begin{aligned} (3) \quad & \frac{5}{\sqrt{5}} \\ &= \frac{5 \times \sqrt{5}}{\sqrt{5} \times \sqrt{5}} \\ &= \frac{5\sqrt{5}}{5} \\ &= \sqrt{5} \end{aligned}$$

$$\begin{aligned} (4) \quad & -\frac{17}{\sqrt{17}} \\ &= -\frac{1 \times \sqrt{17}}{\sqrt{17} \times \sqrt{17}} \\ &= -\frac{17\sqrt{17}}{17} \\ &= -\sqrt{17} \end{aligned}$$

$$\begin{aligned} (5) \quad & \frac{1}{\sqrt{18}} \\ &= \frac{1}{3\sqrt{2}} \\ &= \frac{1 \times \sqrt{2}}{3\sqrt{2} \times \sqrt{2}} \\ &= \frac{\sqrt{2}}{6} \end{aligned}$$

$$\begin{aligned} (6) \quad & -\frac{2}{\sqrt{8}} \\ &= -\frac{2}{2\sqrt{2}} \\ &= -\frac{1}{\sqrt{2}} \\ &= -\frac{1 \times \sqrt{2}}{\sqrt{2} \times \sqrt{2}} \\ &= -\frac{\sqrt{2}}{2} \end{aligned}$$

$$\begin{aligned} (7) \quad & -\frac{6}{\sqrt{3}} \\ &= -\frac{6 \times \sqrt{3}}{\sqrt{3} \times \sqrt{3}} \\ &= -\frac{6\sqrt{3}}{3} \\ &= -2\sqrt{3} \end{aligned}$$

$$\begin{aligned} (8) \quad & -\left(-\frac{30}{\sqrt{20}}\right) \\ &= +\frac{30}{2\sqrt{5}} \\ &= \frac{15}{\sqrt{5}} \\ &= \frac{15 \times \sqrt{5}}{\sqrt{5} \times \sqrt{5}} \\ &= \frac{15\sqrt{5}}{5} \\ &= 3\sqrt{5} \end{aligned}$$

$$\begin{aligned} (9) \quad & \frac{\sqrt{5}}{\sqrt{14}} \\ &= \frac{\sqrt{5} \times \sqrt{14}}{\sqrt{14} \times \sqrt{14}} \\ &= \frac{\sqrt{70}}{14} \end{aligned}$$

$$\begin{aligned} (10) \quad & -\sqrt{\frac{16}{3}} \\ &= -\frac{\sqrt{16}}{\sqrt{3}} \\ &= -\frac{4}{\sqrt{3}} \\ &= -\frac{4 \times \sqrt{3}}{\sqrt{3} \times \sqrt{3}} \\ &= -\frac{4\sqrt{3}}{3} \end{aligned}$$

$$\begin{aligned} (11) \quad & \frac{3\sqrt{6}}{\sqrt{45}} \\ &= \frac{3\sqrt{2}}{\sqrt{15}} \quad \leftarrow \text{約分} \\ &= \frac{3\sqrt{2} \times \sqrt{15}}{\sqrt{15} \times \sqrt{15}} \\ &= \frac{3\sqrt{30}}{15} \\ &= \frac{\sqrt{30}}{5} \end{aligned}$$

$$\begin{aligned} (12) \quad & -\left(-\frac{8\sqrt{2}}{\sqrt{48}}\right) \\ &= +\frac{8}{\sqrt{24}} \quad \leftarrow \text{約分} \\ &= \frac{8}{2\sqrt{6}} \\ &= \frac{4}{\sqrt{6}} \quad \leftarrow \text{約分} \\ &= \frac{4 \times \sqrt{6}}{\sqrt{6} \times \sqrt{6}} \\ &= \frac{4\sqrt{6}}{6} \\ &= \frac{2\sqrt{6}}{3} \end{aligned}$$

2. 分母を有理化せよ。(S級1分, A級1分30秒, B級2分20秒, C級3分30秒)

$$(1) \quad -\frac{1}{\sqrt{3}}$$

$$= -\frac{1 \times \sqrt{3}}{\sqrt{3} \times \sqrt{3}}$$

$$= -\frac{\sqrt{3}}{3}$$

$$(2) \quad -\left(-\frac{1}{\sqrt{11}}\right)$$

$$= +\frac{1 \times \sqrt{11}}{\sqrt{11} \times \sqrt{11}}$$

$$= \frac{\sqrt{11}}{11}$$

$$(3) \quad \frac{2}{\sqrt{2}}$$

$$= \frac{2 \times \sqrt{2}}{\sqrt{2} \times \sqrt{2}}$$

$$= \frac{2\sqrt{2}}{2}$$

$$= \sqrt{2}$$

$$(4) \quad -\frac{19}{\sqrt{19}}$$

$$= -\frac{1 \times \sqrt{19}}{\sqrt{19} \times \sqrt{19}}$$

$$= -\frac{19\sqrt{19}}{19}$$

$$= -\sqrt{19}$$

$$(5) \quad \frac{1}{\sqrt{12}}$$

$$= \frac{1}{2\sqrt{3}}$$

$$= \frac{1 \times \sqrt{3}}{2\sqrt{3} \times \sqrt{3}}$$

$$= \frac{\sqrt{3}}{6}$$

$$(6) \quad -\left(-\frac{4}{\sqrt{8}}\right)$$

$$= +\frac{4}{2\sqrt{2}}$$

$$= \frac{2}{\sqrt{2}}$$

$$= \frac{2 \times \sqrt{2}}{\sqrt{2} \times \sqrt{2}}$$

$$= \frac{2\sqrt{2}}{2}$$

$$= \sqrt{2}$$

$$(7) \quad \frac{25}{\sqrt{5}}$$

$$= \frac{25 \times \sqrt{5}}{\sqrt{5} \times \sqrt{5}}$$

$$= \frac{25\sqrt{5}}{5}$$

$$= 5\sqrt{5}$$

$$(8) \quad -\frac{16}{\sqrt{8}}$$

$$= -\frac{16}{2\sqrt{2}}$$

$$= -\frac{8}{\sqrt{2}}$$

$$= -\frac{8 \times \sqrt{2}}{\sqrt{2} \times \sqrt{2}}$$

$$= -\frac{8\sqrt{2}}{2}$$

$$= -4\sqrt{2}$$

$$(9) \quad \frac{\sqrt{5}}{\sqrt{26}}$$

$$= \frac{\sqrt{5} \times \sqrt{26}}{\sqrt{26} \times \sqrt{26}}$$

$$= \frac{\sqrt{130}}{26}$$

$$(10) \quad -\sqrt{\frac{27}{5}}$$

$$= -\frac{\sqrt{27}}{\sqrt{5}}$$

$$= -\frac{3\sqrt{3}}{\sqrt{5}}$$

$$= -\frac{3\sqrt{3} \times \sqrt{5}}{\sqrt{5} \times \sqrt{5}}$$

$$= -\frac{3\sqrt{15}}{5}$$

$$(11) \quad \frac{6\sqrt{10}}{\sqrt{15}}$$

$$= \frac{6\sqrt{2}}{\sqrt{3}} \quad \leftarrow \text{約分}$$

$$= \frac{6\sqrt{2}}{3}$$

$$= \frac{6\sqrt{2} \times \sqrt{3}}{\sqrt{3} \times \sqrt{3}}$$

$$= \frac{6\sqrt{6}}{3}$$

$$= 2\sqrt{6}$$

$$(12) \quad -\left(-\frac{18\sqrt{2}}{\sqrt{120}}\right)$$

$$= +\frac{18}{\sqrt{60}} \quad \leftarrow \text{約分}$$

$$= \frac{18}{2\sqrt{15}}$$

$$= \frac{9}{\sqrt{15}} \quad \leftarrow \text{約分}$$

$$= \frac{9 \times \sqrt{15}}{\sqrt{15} \times \sqrt{15}}$$

$$= \frac{9\sqrt{15}}{15}$$

$$= \frac{3\sqrt{15}}{5}$$