

## 反射テスト 平方根 指数法則 代入 01

1. 次の計算をせよ。(S級1分40秒, A級2分30秒, B級4分, C級6分)

(1)  $x = -\sqrt{2}$ ,  $y = -\sqrt{3}$  のとき,

$$-6xy^3 \div \left(-\frac{3}{2}x^3y^2\right)^2 \times 3x^4y$$

(2)  $x = \sqrt{6} + \sqrt{2}$ ,  $y = \sqrt{6} - \sqrt{2}$  のとき,

$$\left(-\frac{1}{2}x^4y^3\right)^5 \div \left(-\frac{2}{3}x^3y^6\right)^3 \div \left(-\frac{3x^5}{8y^2}\right)^2$$

2. 次の計算をせよ。(S級1分50秒, A級2分50秒, B級4分20秒, C級6分)

(1)  $x = -\sqrt{2}$ ,  $y = -\sqrt{6}$  のとき,

$$6xy^2 \div \left(-\frac{4}{3}x^3y^2\right)^2 \times (-8x^5y)$$

(2)  $x = \sqrt{5} + \sqrt{2}$ ,  $y = \sqrt{5} - \sqrt{2}$  のとき,

$$\left(-\frac{1}{2}x^5y^3\right)^4 \div \left(-\frac{2}{3}x^3y^5\right)^3 \div \left(-\frac{3x^6}{8y}\right)^2$$

# 反射テスト 平方根 指数法則 代入 01 解答解説

1. 次の計算をせよ。(S級1分40秒, A級2分30秒, B級4分, C級6分)

★文字式のかけ算・割り算

- ① ( ) を外す.
- ② **なるべく早く全体の「+」「-」を決定する.**
- ③ 係数の計算をする.
- ④ 文字ごとに計算をする.

★文字式への代入 代入は文字式の計算の後.

(1)  $x = -\sqrt{2}$ ,  $y = -\sqrt{3}$  のとき,

$$\begin{aligned} & -6xy^3 \div \left(-\frac{3}{2}x^3y^2\right)^2 \times 3x^4y \\ &= -6xy^3 \div \left(+\frac{9x^6y^4}{4}\right) \times 3x^4y \\ &= -6xy^3 \times \frac{4}{9x^6y^4} \times 3x^4y \\ &= -\frac{8}{x} \\ &= -\frac{8}{-\sqrt{2}} \\ &= \frac{8\sqrt{2}}{2} = 4\sqrt{2} \end{aligned}$$

(2)  $x = \sqrt{6} + \sqrt{2}$ ,  $y = \sqrt{6} - \sqrt{2}$  のとき,

$$\begin{aligned} & \left(-\frac{1}{2}x^4y^3\right)^5 \div \left(-\frac{2}{3}x^3y^6\right)^3 \div \left(-\frac{3x^5}{8y^2}\right)^2 \\ &= -\frac{x^{20}y^{15}}{32} \div \left(-\frac{8x^9y^{18}}{27}\right) \div \left(+\frac{9x^{10}}{64y^4}\right) \\ &= +\frac{x^{20}y^{15}}{32} \times \frac{27}{8x^9y^{18}} \times \frac{64y^4}{9x^{10}} \\ &= \frac{3xy}{4} \\ &= \frac{3}{4} \times (\sqrt{6} + \sqrt{2})(\sqrt{6} - \sqrt{2}) \\ &= \frac{3}{4} \times (\sqrt{6}^2 - \sqrt{2}^2) \\ &= \frac{3}{4} \times 4 = 3 \end{aligned}$$

2. 次の計算をせよ。(S級1分50秒, A級2分50秒, B級4分20秒, C級6分)

(1)  $x = -\sqrt{2}$ ,  $y = -\sqrt{6}$  のとき,

$$\begin{aligned} & 6xy^2 \div \left(-\frac{4}{3}x^3y^2\right)^2 \times (-8x^5y) \\ &= 6xy^2 \div \left(+\frac{16x^6y^4}{9}\right) \times (-8x^5y) \\ &= -6xy^2 \times \frac{9}{16x^6y^4} \times 8x^5y \\ &= -\frac{27}{y} \\ &= -\frac{27}{-\sqrt{6}} \\ &= +\frac{27\sqrt{6}}{\sqrt{6} \times \sqrt{6}} = \frac{27\sqrt{6}}{6} = \frac{9\sqrt{6}}{2} \end{aligned}$$

(2)  $x = \sqrt{5} + \sqrt{2}$ ,  $y = \sqrt{5} - \sqrt{2}$  のとき,

$$\begin{aligned} & \left(-\frac{1}{2}x^5y^3\right)^4 \div \left(-\frac{2}{3}x^3y^5\right)^3 \div \left(-\frac{3x^6}{8y}\right)^2 \\ &= +\frac{x^{20}y^{12}}{16} \div \left(-\frac{8x^9y^{15}}{27}\right) \div \left(+\frac{9x^{12}}{64y^2}\right) \\ &= -\frac{x^{20}y^{12}}{16} \times \frac{27}{8x^9y^{15}} \times \frac{64y^2}{9x^{12}} \\ &= -\frac{3}{2xy} \\ &= -\frac{3}{2(\sqrt{5} + \sqrt{2})(\sqrt{5} - \sqrt{2})} \\ &= -\frac{3}{2(\sqrt{5}^2 - \sqrt{2}^2)} \\ &= -\frac{3}{2 \times 3} = -\frac{1}{2} \end{aligned}$$