

反射テスト 対数 性質 基礎 02

1. に数字や演算記号をうめよ. (S 級 45 秒, A 級 1 分 15 秒, B 級 2 分, C 級 3 分)

(1)

$$\log_2 1 = \boxed{}$$

(2)

$$\log_2 2 = \boxed{}$$

(3)

$$\begin{aligned}\log_2 16 &= \log_2 2^{\boxed{}} \\ &= \boxed{} \log_2 2 \\ &= \boxed{}\end{aligned}$$

(4)

$$\begin{aligned}\log_2 6 &= \log_2 (2 \times \boxed{}) \\ &= \log_2 2 \boxed{} \log_2 \boxed{} \\ &= \boxed{} \boxed{} \log_2 \boxed{}\end{aligned}$$

(5)

$$\begin{aligned}\log_2 500 &= \log_2 (2^2 \times 5^{\boxed{}}) \\ &= \log_2 2^2 \boxed{} \log_2 5^{\boxed{}} \\ &= 2 \log_2 2 + \boxed{} \log_2 5 \\ &= \boxed{} + \boxed{} \log_2 5\end{aligned}$$

(6)

$$\begin{aligned}\log_2 \frac{3}{32} &= \log_2 \boxed{} \boxed{} \log_2 \boxed{} \\ &= \log_2 \boxed{} \boxed{} \log_2 2^{\boxed{}} \\ &= \log_2 \boxed{} - \boxed{} \log_2 2 \\ &= \log_2 \boxed{} - \boxed{}\end{aligned}$$

2. に数字や演算記号をうめよ. (S 級 55 秒, A 級 1 分 30 秒, B 級 2 分 30 秒, C 級 4 分)

(1)

$$\log_3 1 = \boxed{}$$

(2)

$$\begin{aligned}\log_3 \frac{1}{3} &= \log_3 3^{\boxed{}} \\ &= \boxed{}\end{aligned}$$

(3)

$$\begin{aligned}\log_3 81 &= \log_3 3^{\boxed{}} \\ &= \boxed{} \log_3 3 \\ &= \boxed{}\end{aligned}$$

(4)

$$\begin{aligned}\log_3 30 &= \log_3 (2 \times \boxed{} \times \boxed{}) \\ &= \log_3 2 \boxed{} \log_3 \boxed{} \boxed{} \log_3 \boxed{} \\ &= \log_3 2 + \boxed{} + \log_3 \boxed{}\end{aligned}$$

(5)

$$\begin{aligned}\log_3 144 &= \log_3 (2^{\boxed{}} \times 3^{\boxed{}}) \\ &= \log_3 2^{\boxed{}} \boxed{} \log_3 3^{\boxed{}} \\ &= \boxed{} \log_3 2 + \boxed{} \log_3 3 \\ &= \boxed{} \log_3 2 + \boxed{}\end{aligned}$$

(6)

$$\begin{aligned}\log_3 \frac{8}{243} &= \log_3 \boxed{} \boxed{} \log_3 \boxed{} \\ &= \log_3 2^{\boxed{}} \boxed{} \log_3 3^{\boxed{}} \\ &= \boxed{} \log_3 2 - \boxed{} \log_3 3 \\ &= \boxed{} \log_3 2 - \boxed{}\end{aligned}$$

反射テスト 対数 性質 基礎 02 解答解説

1. に数字や演算記号をうめよ。(S 級 45 秒, A 級 1 分 15 秒, B 級 2 分, C 級 3 分)

★ 対数の計算 (1 ではない正の実数 a を底とする対数について)

$M > 0, N > 0$ で, k が実数であるとき,

- ① $\log_a 1 = 0$
- ② $\log_a a = 1$
- ③ $\log_a MN = \log_a M + \log_a N$
- ④ $\log_a \frac{M}{N} = \log_a M - \log_a N$
- ⑤ $\log_a M^k = k \log_a M$

(1)

$$\log_2 1 = \boxed{0}$$

(2)

$$\log_2 2 = \boxed{1}$$

(3)

$$\begin{aligned}\log_2 16 &= \log_2 2^{\boxed{4}} \\ &= \boxed{4} \log_2 2 \\ &= \boxed{4}\end{aligned}$$

(4)

$$\begin{aligned}\log_2 6 &= \log_2 (2 \times \boxed{3}) \\ &= \log_2 2 \boxed{+} \log_2 \boxed{3} \\ &= \boxed{1} \boxed{+} \log_2 \boxed{3}\end{aligned}$$

(5)

$$\begin{aligned}\log_2 500 &= \log_2 (2^2 \times 5^{\boxed{3}}) \\ &= \log_2 2^2 \boxed{+} \log_2 5^{\boxed{3}} \\ &= 2 \log_2 2 + \boxed{3} \log_2 5 \\ &= \boxed{2} + \boxed{3} \log_2 5\end{aligned}$$

(6)

$$\begin{aligned}\log_2 \frac{3}{32} &= \log_2 \boxed{3} \boxed{-} \log_2 \boxed{32} \\ &= \log_2 \boxed{3} \boxed{-} \log_2 2^{\boxed{5}} \\ &= \log_2 \boxed{3} - \boxed{5} \log_2 2 \\ &= \log_2 \boxed{3} - \boxed{5}\end{aligned}$$

2. に数字や演算記号をうめよ. (S 級 55 秒, A 級 1 分 30 秒, B 級 2 分 30 秒, C 級 4 分)

(1)

$$\log_3 1 = \boxed{0}$$

(2)

$$\begin{aligned}\log_3 \frac{1}{3} &= \log_3 3^{\boxed{-1}} \\ &= \boxed{-1}\end{aligned}$$

(3)

$$\begin{aligned}\log_3 81 &= \log_3 3^{\boxed{4}} \\ &= \boxed{4} \log_3 3 \\ &= \boxed{4}\end{aligned}$$

(4)

$$\begin{aligned}\log_3 30 &= \log_3 (2 \times \boxed{3} \times \boxed{5}) \\ &= \log_3 2 \boxed{+} \log_3 \boxed{3} \boxed{+} \log_3 \boxed{5} \\ &= \log_3 2 + \boxed{1} + \log_3 \boxed{5}\end{aligned}$$

(5)

$$\begin{aligned}\log_3 144 &= \log_3 (2^{\boxed{4}} \times 3^{\boxed{2}}) \\ &= \log_3 2^{\boxed{4}} \boxed{+} \log_3 3^{\boxed{2}} \\ &= \boxed{4} \log_3 2 + \boxed{2} \log_3 3 \\ &= \boxed{4} \log_3 2 + \boxed{2}\end{aligned}$$

(6)

$$\begin{aligned}\log_3 \frac{8}{243} &= \log_3 \boxed{8} \boxed{-} \log_3 \boxed{243} \\ &= \log_3 2^{\boxed{3}} \boxed{-} \log_3 3^{\boxed{5}} \\ &= \boxed{3} \log_3 2 - \boxed{5} \log_3 3 \\ &= \boxed{3} \log_3 2 - \boxed{5}\end{aligned}$$