

第 10 回 小テスト (微分 I)

学生番号 _____

氏名 _____

1. 以下の値を求めなさい.

(1) $2 \log e$

答. $2 \log e = 2$

(2) $\log e^2$

答. $\log e^2 = 2 \log e = 2$

(3) $\log \frac{1}{e}$

答. $\log \frac{1}{e} = \log e^{-1} = -\log e = -1$

2. 以下の微分を求めなさい.

(1) $(3 \log x)'$

答. $(3 \log x)' = 3 \cdot (\log x)' = \frac{3}{x}$

(2) $(\log(x-1))'$

答. $(\log(x-1))' = \frac{1}{x-1} \cdot (x-1)' = \frac{1}{x-1}$

(3) $(x \log x)'$

答.

$$\begin{aligned}(x \log x)' &= (x)' \cdot \log x + x \cdot (\log x)' \\ &= \log x + x \cdot \frac{1}{x} = 1 + \log x\end{aligned}$$

(4) $\left(\frac{1}{\log x}\right)'$

答. $\left(\frac{1}{\log x}\right)' = -\frac{(\log x)'}{\log x} = -\frac{1}{x \log x}$

(5) $(\log_2 x)'$

答. $(\log_2 x)' = \frac{1}{x \log 2}$

(6) $(\log_5(2x+3))'$

答.

$$(\log_5(2x+3))' = \frac{1}{(2x+3) \log 5} \cdot (2x+3)' = \frac{2}{(2x+3) \log 5}$$