

13 経済数学入門 II 小テスト (2019/01/09) : 解答・解説

クラス： 01 番号：

氏名：

問題 13.1. 次の微分を求めよ.

$$(1) (\ln(2x - 3))' = \frac{(2x - 3)'}{2x - 3} = \frac{\mathbf{2}}{\mathbf{2x - 3}}$$

$$(2) \left(\ln(x^{\frac{1}{4}})\right)' = \left(\frac{1}{4} \cdot \ln(x)\right)' = \frac{1}{4} \cdot \frac{1}{x} = \frac{\mathbf{1}}{\mathbf{4x}}$$

$$(3) (\ln(x^{-3}))' = (-3 \cdot \ln(x))' = -3 \cdot \frac{1}{x} = -\frac{\mathbf{3}}{\mathbf{x}}$$

$$(4) (\ln(5^x))' = (x \cdot \ln(5))' = 1 \cdot \ln(5) = \mathbf{\ln(5)}$$

$$(5) (\ln((2x - 3)^4))' = (4 \cdot \ln(2x - 3))' = 4 \cdot \frac{2}{2x - 3} = \frac{\mathbf{8}}{\mathbf{2x - 3}}$$

問題 13.2. $f(x, y) = \ln(x^{0.2}y^{0.8})$ のとき, 次を求めよ.

$$\bullet f_x(x, y) = (0.2 \cdot \ln(x) + 0.8 \cdot \ln(y))_x = \frac{\mathbf{0.2}}{\mathbf{x}}$$

$$\bullet f_y(x, y) = (0.2 \cdot \ln(x) + 0.8 \cdot \ln(y))_y = \frac{\mathbf{0.8}}{\mathbf{y}}$$

$$\bullet \frac{f_x(x, y)}{f_y(x, y)} = \frac{\frac{0.2}{x}}{\frac{0.8}{y}} = \frac{0.2}{x} \cdot \frac{y}{0.8} = \frac{\mathbf{y}}{\mathbf{4x}}$$