

1.3.10 題意 1) $f(t), g(t) \neq 0$ 7'

$$f(t) = \sum_{i=0}^m a_i t^i \quad g(t) = \sum_{j=0}^n b_j t^j$$

$$a_m \neq 0, \quad b_n \neq 0 \quad \text{7' 113.}$$

$$\text{deg } f = m, \quad \text{deg } g = n, \quad \text{deg } f \text{ deg } g = mn$$

$$\begin{aligned} \text{deg } f(g(t)) &= \text{deg} \left\{ \sum_{i=0}^m a_i \{g(t)\}^i \right\} \\ &= \max \{ \text{deg } a_0, \text{deg } a_1 g(t), \dots, \text{deg } a_n \{g(t)\}^n \} \\ &= \max \{ \text{deg } a_0, \text{deg } a_1 + \text{deg } g(t), \text{deg } a_2 + 2 \text{deg } g(t), \\ &\quad \dots, \text{deg } a_n + n \text{deg } g \} \end{aligned}$$

$$= \max \{ \text{deg } a_0, \text{deg } a_1 + n, \dots, \text{deg } a_n + nm \}$$

$$= \max_{0 \leq j \leq n} \{ \text{deg } a_j + jn \}$$

$$\text{deg } a_j = \begin{cases} 0 & (a_j \neq 0) \\ -\infty & (a_j = 0) \end{cases} \quad \text{7' } a_n \neq 0 \text{ 11) } \text{deg } a_n = 0$$

$$\text{deg } a_j \leq \text{deg } a_n \quad \text{7' 113.}$$

$$\text{deg } a_j + jn \leq \text{deg } a_n + jn \leq \text{deg } a_n + nm = nm$$

(1) 552

$$\text{deg } f(g(t)) = nm = (\text{deg } f)(\text{deg } g) \quad \text{7' 113.}$$

553 命題は $f(x) = 0$ 7' 113. $\text{deg } f = -\infty$ 7' 113. 成り立つ。

$g(x) = 0$ 97310 $f(x)$ に定数項がある 7' 113. 成り立つ。

7' 113. 結局にわたる $f(x), g(x) \in B \setminus \{0\}$ 7' 113. 成り立つ。