

$$\begin{array}{lll}
 \deg(\sigma) & 1 & \\
 \deg(\sigma') & 2 & (\sigma^3)^1 = 5\sigma^3\sigma' \\
 \deg(\sigma'') & 3 & \\
 \end{array}$$

$$\sigma''' = \left(\cancel{\sigma''} a_1\sigma + a_2(\sigma^2) + a_3\sigma^3 \right)^1 = a_1\sigma^1 + 2a_2\sigma^2 + 3a_3\sigma^3$$

$$P_n(x) = \left\{ \begin{array}{l} x_{1,1} \\ \vdots \\ x_{n,1} \dots x_{n,n} \end{array} \right\}_{n(0,1)}$$

$$\exists y \in (0,1) \setminus N \neq \emptyset$$

~~$\forall x \in \mathbb{R} \quad \sigma(x) \neq y$~~

$$\Rightarrow \exists y \in (0,1) \setminus N$$

da $\text{range}(\sigma) = (0,1)$ $\exists x \in \mathbb{R}: \sigma(x) = y$

$$\cancel{\Rightarrow}$$

$$\sigma^{(n-1)} = y$$

$$t_\sigma = x$$

$$\begin{aligned}
 \sigma^n - (\sigma^{(n-1)})^1 &= \left(\sum_{k=1}^{\deg(\sigma^{(n-1)})} a_k \sigma^k \right)^1 = \sum_{k=1}^{\deg(\sigma^{(n-1)})} a_k k \sigma^{k-1} \\
 &= \sum_{k=1}^{\deg(\sigma^{(n-1)})-1} \dots + a_{\deg(\sigma^{(n-1)})} \deg(\sigma^{(n-1)})
 \end{aligned}$$

$$\sigma^{(n)} = P_n(\sigma)$$

$$a_0 + a_1 X + a_2 X^2 + \dots$$

$$P_n \neq 0 \quad n \in N$$

$$\text{Sei } N = \deg(P_n)$$

$$P_n = a_0 + \dots + a_N \sigma^N \text{ mit } a_N \neq 0.$$

$$\begin{aligned}
\sigma^{(n+1)} &= (\sigma^{(n)})' \\
&= (P_n(\sigma))' = \left(\sum_{k=0}^N a_k \sigma^k \right)' \\
&= \sum_{k=1}^N a_k \cdot k \sigma^{k-1} \sigma' \\
&= \sum_{k=1}^{N-1} a_k \cdot k \sigma^{k-1} \sigma' + N a_N \sigma^{N-1} (1-\sigma) \sigma
\end{aligned}$$

\$\underbrace{\hspace{100px}}_{\deg \leq N}\$
\$\underbrace{\hspace{100px}}_{\deg = N+1}\$