\[ \text{Proof:} \quad P = Q \quad \text{for all } n \in \mathbb{N} \]

Next, we consider the case where \( P \) and \( Q \) are polynomials.

Let \( P(x) = a_n x^n + a_{n-1} x^{n-1} + \cdots + a_1 x + a_0 \) and \( Q(x) = b_m x^m + b_{m-1} x^{m-1} + \cdots + b_1 x + b_0 \) be two polynomials.

We want to prove that for any \( x \in \mathbb{R} \),

\[ P(x) = Q(x) \]

We will use mathematical induction to prove this.

**Base Case:**

For \( n = 0 \), we have \( P(0) = a_0 = b_0 \) since the constant term of both polynomials is the same.

**Inductive Step:**

Assume that the statement is true for \( n = k \), i.e.,

\[ P(x) = Q(x) \quad \text{for all } x \in \mathbb{R} \]

Then, consider \( n = k + 1 \).

Let \( P(x) = a_{k+1} x^{k+1} + a_k x^k + \cdots + a_1 x + a_0 \) and \( Q(x) = b_{k+1} x^{k+1} + b_k x^k + \cdots + b_1 x + b_0 \).

By the inductive hypothesis,

\[ P(x) = Q(x) \quad \text{for all } x \in \mathbb{R} \]

This implies that the coefficients of the corresponding terms are equal.

Hence, we have shown that for all \( x \in \mathbb{R} \),

\[ P(x) = Q(x) \]

This completes the proof.
Let \( C = \{x_1, \ldots, x_n\} \) be the set of elements.

For each \( i \), let \( f(x_i) = 1 \) if \( x_i \) is in \( C \), and \( f(x_i) = 0 \) otherwise.

Let \( C_i = \{ f \in C \mid f(x_i) = 1 \} \).

Then \( C_i = \{ x_i \mid f(x_i) = 1 \} \).

Let \( I \) be the set of indices such that \( f(x_i) = 1 \).

Then \( |I| = \# \mathbb{S} \geq \# \mathbb{S}_0 \).

And \( \# \mathbb{S}_0 + \# \mathbb{S} = n \).

Then \( |C| = \# \mathbb{S} \geq \left\lfloor \frac{n}{2} \right\rfloor \).

Thus \( T(n) \geq T(\left\lfloor \frac{n}{2} \right\rfloor) + 1 \).

\[ T(n) \geq T(\left\lfloor \frac{n}{2} \right\rfloor) + k \]

Let \( k = \left\lceil \log n \right\rceil \).

Then \( T(n) = \left\lceil \log n \right\rceil \).
\[ T_A \nabla \zeta \in \Lambda \Rightarrow A \times \nabla = \nabla \zeta \in A \times \Lambda \]

\[ \left| C \right| \leq \prod_{C=1} \log |C| 

\[ T_A \nabla \zeta \in \Lambda \Rightarrow \prod_{C=1} \log |C| \]
\[ C = \{ x_1, x_2, \ldots, x_n \} \]

\[ \bigcap_{A \subseteq C} \mathcal{F} \supseteq \lceil \log n \rceil \]