

Schanuel's conjecture's partial resolve

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Schanuel's conjecture

$\alpha_1, \alpha_2, \dots, \alpha_n$ are the complex numbers linearly independent.

$$\text{trans.deg}_{\mathbb{Q}}(\mathbb{Q}(\alpha_1, \alpha_2, \dots, \alpha_n, e^{\alpha_1}, e^{\alpha_2}, \dots, e^{\alpha_n})) \geq n$$

Remark: $\alpha_1, \alpha_2, \dots, \alpha_n$ is algebraic numbers case, is known as Lindemann-Weierstrass theorem

Theorem 1.1. α is the complex number $\neq 0$

$$\text{trans.deg}_{\mathbb{Q}}(\mathbb{Q}(\alpha, e^{\alpha})) \geq 1$$

proof. α is algebraic number, use Lindemann-Weierstrass theorem, e^{α} is \mathbb{Q} algebraically independent. Or α is algebraically independent. 2 cases are satisfied

$$\text{trans.deg}_{\mathbb{Q}}(\mathbb{Q}(\alpha, e^{\alpha})) \geq 1$$

□

Unfortunately, this proof has not new result.