

RADBOUD UNIVERSITY NIJMEGEN



FACULTY OF SCIENCE

Interesting Theorems

WHY I DEFINITELY DESERVE A FIELDS MEDAL

THESIS BSC MATHEMATICS

Author:
Huey DUCK

Supervisor:
dr. Dewey DUCK

Second reader:
prof. dr. Louie DUCK

February 2049

Contents

1	Complex stuff	2
1.1	Domains	2
1.2	Yummyyumyum	2

1 Complex stuff

1.1 Domains

Let's start with the following definition:

Definition 1.1. A set $U \subseteq \mathbb{C}$ is a *domain* if:

- U is open in \mathbb{C} , and
- U is connected.

1.2 Yummyyummy

TO WRITE: an introduction and some examples

Theorem 1.2. Suppose $n \in \mathbb{Z}$, then the following are equivalent:

- $n > 5$.
- $5 > 5$.
- For each $n \in \mathbb{Z}$, we have:

$$n > n + 1 > n + 1^2 > \dots > n + 7. \tag{1}$$

where 7 is an arbitrary element of

$$\int_a^b \text{supersin } \alpha + i \text{ supercos } \beta db(a).$$

Remark. Interesting!

Proof. See [3].

This doesn't seem right...

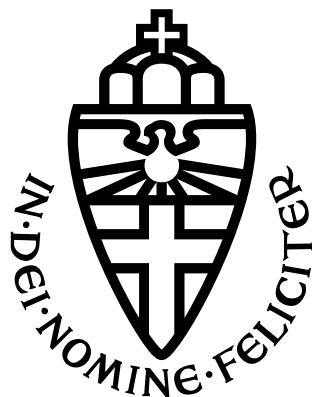


Figure 1: Motivational illustration. Similar to [1, 2].

Corollary 1.2.1. Suppose $U \subseteq \mathbb{C}$ is a domain (see Definition 1.1), and $f : \bar{U} \rightarrow \mathbb{C}$ is continuous on \bar{U} and holomorphic on U . If $z \mapsto |f(z)|$ is constant on ∂U , then f has a zero in U .

Proof. If not, consider $\frac{1}{f}$.

The proof of this theorem is illustrated in Figure 1.



Figure 2: A cute dog.

References

- [1] J. H. Oort, F. J. Kerr, and G. Westerhout. Reports on the Progress of Astronomy the Galactic System as a Spiral Nebula. *Monthly Notices of the Royal Astronomical Society*, 118(4):379–389, 8 1958.
- [2] I. S. Reed and G. Solomon. Polynomial Codes Over Certain Finite Fields. *Journal of the Society for Industrial and Applied Mathematics*, 8(2):300–304, 1960.
- [3] Bryan P. Rynne and Martin A. Youngson. *Linear functional analysis*. Springer, London :, 2008.