Post With Code

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This is a post with executable code.

Definition (Important definition)

Definition 0.0.1 (Important definition)**.** A number a is called *positivie* if $a > 0$.

Theorem 0.0.1 (Important theorem)**.** *If $a > b$ and $b > c$ then $a > c$.*

Remark (Important remark)

Remark 0.0.1 (Important remark). The property in Theorem 0.0.1 is called "transitivity".

Commutation relations

We are going to discuss now commutation relations.

This example Quarto markdown file demonstrates the use of the `calloute-theorem` filter.

Examples

Proposition 0.0.1. *If there exists a primitive root modulo n, then there are exactly $\varphi(\varphi(n))$ primitive roots modulo n.*

Theorem 0.0.1 (Existence of primitive roots)**.** *Primitive roots modulo n exists if and only if $n = 2, 4, p^k, 2p^k$ for an odd prime p and a positive integer k.*

Proof (Proof of Proposition 0.0.1)

Proof of Proposition 0.0.1. We note that the primitive roots modulo n is exactly the generators of the group of units modulo n. By the hypothesis, the group of units modulo n is cyclic, thus having $\varphi(\varphi(n))$ generators. □

Remark

Remark. Group theory greatly simplifies the proof of the theorem.

Exercise 0.0.1. Prove that the quadratic residues modulo p form a subgroup of the group of units modulo p of index 2.

Solution (Solution to Exercise 0.0.1)

Solution 0.0.1 (Solution to Exercise 0.0.1)*.* Use the fact that the group of units modulo p is cyclic.

On default behaviors

Note

Corollary 0.0.1 (Default style)**.** *If you set the metadata of a theorem type to* `default`*, it will be rendered like this.*

Definition (Default style without title)

Definition 0.0.1 (Default style without title)**.** `callout` can also be set to `default` in the metadata.

Conjecture 0.0.1 (As is)**.** *Theorem types not specified in the metadata will be rendered as is.*