> [!info] Info
>
> This note, that was found here, as a part of a collection
> is written (completely with human hands) by Rupadarshi Ray,
> was created on October 15, 2024 3:35:58 PM,
> was last modified on September 7, 2026 1:54:36 PM, and
> was exported on September 7, 2026 3:04:07 PM.

$$\mathcal{O}_{\overline{\mathbb{Q}}}$$

$\mathbb{Z} \subset \mathcal{O}_{\overline{\mathbb{Q}}} \subset \bar{\mathbb{Q}}$

$\mathcal{O}_{\overline{\mathbb{Q}}} \cap \mathbb{Q} = \mathbb{Z}$

Suppose $c = \frac{m}{n}$ where $(m, n) = 1$ and suppose c satisfies

$$X^d + a_{d-1}X^{d-1} + \cdots + a_0 = 0$$

with $a_i \in \mathbb{Z}$. Then

$$m^d + \underbrace{a_{d-1}m^{d-1}n + \cdots + a_d n^d}_{n|} = 0$$

thus $n \mid m^d$. But $(m, n) = 1$. Thus $n = 1$, and $c \in \mathbb{Z}$.

$\mathbb{Z}\{\zeta_n^k | n, k \in \mathbb{N}\} \subset \mathcal{O}_{\overline{\mathbb{Q}}}$

$\mathbb{Z}\{X \in \mathbb{C} \mid X^n \in \mathbb{Z}\}$

Current note has 0 direct children and 0 total descendants.

- stretchy
  - $\mathcal{O}_{\overline{\mathbb{Q}}}$

And it has 62 siblings.

- stretchy
  - Trefoil 3_1 knot
  - The only compact connected Lie group that can act faithfully on a torus is itself
  - Hecke algebras
  - $\overline{B^n}$
  - $\mathrm{BS}(1, 2)$
  - $(\mathbb{C}, +, \times)$
  - $D^* := D \setminus \{0\}$
  - Cantor set
  - Configuration space of N rigid points in $\mathbb{R}^3$
  - Free groups
  - $GL(2)(\mathbb{Z}) \curvearrowright T^2$
  - H_2^3
  - $[a, b]$
  - Figure 8 knot
  - Lamplighter group on $\mathbb{Z}_2$
  - $\beta\mathbb{N}$
  - $\#_2 \mathbb{R}P^2$
  - $\prod_{i \in \mathbb{N}} \{1, \ldots, n_i\}$
  - $\mathbb{R}P^n$
  - $(\mathbb{Q}, +, \times, <)$
  - $\mathbb{Q}_{\hat{p}}$
  - $\overline{\mathbb{Q}}$
  - $\mathbb{Q}_{\mathrm{constr}}$
  - $\mathbb{Q}(\xi_n)$
  - $\mathcal{O}_{\overline{\mathbb{Q}}}$
  - $(\mathbb{R}, +, \times, <, \sup)$
  - Homeomorphism of $\mathbb{R}^2$ that sends $\mathbb{N}$ to a countable closed discrete subset
  - $\mathbb{R}^2 \times S^1$
  - $\mathbb{R}^n$
  - $\mathbb{R} \times S^1$
  - $\mathbb{R} \times S^2$
  - S^1
  - $S^1 \wedge S^1$
  - $S^1 \times S^n$
  - S^2 and $\mathbb{C}\boldsymbol{P}^1$
  - Mapping torus of the antipodal map of S^2
  - S^3
  - S^n
  - I-bundle
  - Symmetric group
  - $\mathbb{T}$
  - T^2
  - T_g^2
  - $T_{0,0,3}^2$
  - $\mathbb{R}^2 \setminus \{0\}$
  - Three $T_{1,0,1}^2$ glued at their boundaries
  - $T_{1,1,0}^2$
  - T_2^2

- $T_g^2 \times [0,1]$
- $\#_{\mathbb{N}} T^2$
- Thompson's group
- T^n
- 3-valent tree
- 4-valent tree
- $[0,1]^{\mathbb{N}}$ with product topology
- Whitehead manifolds
- $\mathbb{Z}$
- $\mathbb{Z}[\sqrt{m}]$
- $\mathbb{Z}[X]$
- $\mathbb{Z}^{\mathbb{N}}$
- $\mathbb{Z}[i]$
- $\mathbb{Z}[i\sqrt{5}]$