·in ZFC, .

Proof. Suppose not, then exists such that but not . Consider the set, the antecedent of the proposition implies that the set does not exist, a contradiction.

·modified Lanchester's square law: dm/dt= -ceiling[n], dn/dt = -ceiling[m].

·圆内外接正方形面积比为1:2.

·如果n不是k次方数（k为正整数），那么为无理数.

Proof. 反设，p, q为正整数且互质，因而p^m与q^n互质，因而存在m使得, 故，由得，有，因，由无穷递降，矛盾.

或 p, q互素，则p^k和q^k互素，又因n非k次方数，q^k不为1，因而n=\frac{p^k}{q^k}矛盾.

·Consider the following mathematical game. You start with a number x, either real or complex, and you are allowed to form a next number from the current one either by adding 1, subtracting 1, multiplying a nonzero integer, or multiplying by x. You win if you can produce the number zero by this process. The number x for which you can win in this game are exactly the algebraic numbers. A number is rational iff you can the game without using the multiply-by-x rule (Hamkins 2021, 1.12 The transcendence game):

乘倒数减1；mx-n=0, x=n/m.

·Variants (e.g. Kummer(1878)-Stieltjes(1890)) of Eculid's proof of infinity of primes

·判断整除

·corollary: 考虑, 我们知道, 假设是有理数，设, 有, i.e. , 由是无理数, 于是我们知道该式无正整数解. 另，方程当常数项为 and no product of variables时, 有正整数解当且仅当有各变量互素的解. 而当非此情况时，则不一定，e.g. 有解而无解.

·构造这样的集合，在求它的逐次导集时，前n次得到的都不是空集，最后第n+1次得到的才是空集

·“克林考虑了所有这些类别的命题能定义的自然数集。他将0阶命题定义的自然数集组成的集合称为\Delta\_0 ，而将n阶存在命题和n阶全称命题定义的自然数集组成的集合分别称为\Sigma\_n 和\Pi\_n 。克林证明了，这些集合组成了一个向上无限绵延的层级，每一层都是自然数集组成的集合，阶数越高，命题能定义的自然数集也越多，表达能力也越强。对于每一层，总有存在这样的集合，它只能被这一层及以上的命题定义，而不能被下方更弱的层定义。也就是说，层级之间的包含关系是严格的。

“也许不出大家的意料，克林证明这一切的方法，仍然是康托尔的对角线法。他定义的这个层级，今天被称为算术层级（Arithmetic Hierarchy），是数理逻辑中的一个重要概念。”

·证明如果下x, y...都是集合（或都属于（或E）M）的话，那么{x, y, ...}也EM

由集合论的公理重复作对其两成员取对，对第三成员与任一集合对并然后用替换公理都映射到其自身上得到第三成员的集合，然后用前两成员的对和第三成员的集合取对，然后对该集合取并得到三成员的集合，即可得到所有成员的集合

这只能证明有穷的情况

对于无限的情况，用替换公理从对应基数的无限集合映射到各个元素上

·1和2是唯二因数的数量和自己相等的整数

·Henkin semantics of second order logic, but as a question

·Standard translation of modal logic to classic logic

·preservationism of paraconsistency

. weighted search (search engine)

e.g. Reader(20), lasser(10), then the search results will show roughly one result for "lasser" for every two results for "Reader"

. Knuth's up-arrow notation

. possible world semantics for relevance logic, e.g. iff or .

. Truthlikeness

. finite variable logic

. first order probabilistic logic

. non normal modal logic

. Lyndon preservation theorem, as a problem/conjecture

. Given any standard model (M, \in\_M) of ZF we can construct an isomorphic non-standard model (M\*, E\*) quite easily by taking M\* = {{x}: x \in M}, and defining {x} E \* {y} <=> x \in y. This model will be well-founded.

. judgement aggregation an impossibility result in akind of three-valued settings

·For all $n\in \mathbb{N^+}-1$, There exists $n$(where $n \geq$ 2 ) irrationals $x\_1, x\_2, ..., x\_n$ such that $({{(x\_1^{x\_2})}^{...}})^{x\_n}$ (note that this is not the tetration) is a rational.

Answer/proof: we know that solutions of polynomials having the form $x^n-m=0$, where $n$ and $m$ are integers, are either integers or irrationals. Then $\sqrt[n]{n}$, where $n$ is integer and $> 2$, is irrational. Let $x\_1=x\_2=...=x\_n=\sqrt[n-1]{n-1}$