

Problem #45

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Summary: Which ordinals correspond to reduction graphs in the λ -calculus?

Some reduction graphs in λ -calculus [VZ84] are isomorphic to ordinals. For example, the reduction graph of $(\lambda x.y)((\lambda z.zzz)(\lambda z.zzz))$ is isomorphic to $\omega + 1$. Which ordinals appear in this way as reduction graphs? It is known that all ordinals less than ϵ_0 can be so represented.

Bibliography

- [VZ84] M. Venturini-Zilli. Reduction graphs in the Lambda Calculus. *Theoretical Computer Science*, 29:251–275, 1984.