Recursion Theory

Joost J. Joosten

Institute for Logic Language and Computation University of Amsterdam Plantage Muidergracht 24 1018 TV Amsterdam Room P 3.26, +31 20 5256095 jjoosten@phil.uu.nl www.phil.uu.nl/~jjoosten

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- So, we can take k to be h(e) (here we use that h should be total!)

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- Fixed points and a map of Amsterdam

Computable approximations

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- We shall see (more or less, we have already seen) that $\varphi_e(x) \downarrow$ and $\varphi_e(x) = y$ is incomputable
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- We shall use these approximations later

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- Next, consider { $x \in \mathbb{N}$ | there is a sequence of exactly x (and no more) 7's in the decimal expansion of π }
- Although the latter is not computable, it is enumerable in an effective way.

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- This is the famous complemantiation theorem.

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- Proof: $\varphi_e(x) \downarrow \text{iff} (\exists s) \exists y \ \varphi_{e,s}(x) = y$

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