Math 6010 - Assignment 9

Due November 6, 2023

(1) [1, Ex 6.2.7]

Construct an infinite sequence of degrees '$\mathbf{0}\ \mathbf{a}_n < \mathbf{0}$' for $n \in \mathbb{N}$, such that $\mathbf{a}_m \wedge\ \mathbf{a}_n = \mathbf{0}$ for all distinct $m, n \in \mathbb{N}$.

Hint. Build noncomputable sets A_n for $n \in \mathbb{N}$ such that for all i, j and all $m \neq n$ in $\mathbb{N}$ the requirements

$$N(m, n, i, j) : \varphi_i^{A_m} = \varphi_j^{A_n} \text{ is a total function } \psi \ \Rightarrow\ \psi \text{ is computable}$$

are satisfied.

Adapt other parts from the proof of the Avoiding Cones Theorem from class accordingly.

(2) Read the proof of the Friedberg Completeness Criterion [1, Theorem 6.4.1].

References

[1] Soare, Robert I. Turing computability : theory and applications. Springer, Berlin, 2016.