Computability and Complexity **Winter 2020**

Week 1/20 - 1/26 Exercise

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1. Show that the function: $m(x) = max\{y|\exists z, x = c^y \cdot z\}$ can be computed by a counter machine program, for any fixed c.

2. Show how any F' program can be translated into an equivalent F program.

3. Find a lambda term Ω, such that $\Omega \rightarrow_\beta \Omega$, i.e., such that it reduces to itself in one step.

4. Does the PCP with pairs $(10, 101), (10, 011), (011, 11), (101, 011)$ have a solution?

5. Prove that it is undecidable, given two context-free grammars G, G', to determine whether $L(G) \subseteq L(G')$.