Computation Theory

Explain *Church’s Thesis*, making clear its connection with computability.

Define precisely what is meant by the set of all *Primitive Recursive (PR)* functions.

Outline steps that would enable you to recursively enumerate the set of all PR functions, showing how to determine the arity of each function generated (little detail is required).

Suppose that $V(n, x)$ is a recursive enumeration of all the PR functions of arity 1. By considering the function $v(x) = S(V(x, x))$ or otherwise, show that

(a) the enumerating function $V(n, x)$ cannot itself be Primitive Recursive;

(b) there are Total Recursive functions that are not Primitive Recursive.