1993 Paper 12 Question 10

Computation Theory

Show that there is no way of deciding by algorithms whether a general register machine program with code p will terminate when started with initial data of 0 in every register. [10 marks]

Show that there is no way of deciding by algorithm whether the blank character will be printed during the course of a general Turing machine computation. [10 marks]

Note: any standard form of the undecidability result for the general halting problem may be assumed, but should be stated clearly.