Marks

[10] **1.** Consider a linear program with n decision variables and m slack variables.

(a) Summarize the steps of an iteration of the revised simplex method, with comment on how we might perform calculations involving $A_{B_i}^{-1}$ based on $A_{B_{i-1}}^{-1}$.

(b) Explain why an iteration of the standard simplex method (writing out the entire dictionary each iteration) requires $O(mn)$ time.

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(c) Argue that if n is very very large compared to m, say $n = m^4$, and A_N is sparse (containing 99% zeros in its entries), then the revised simplex method is much faster than the standard simplex method, even if we explicitly compute A_B^{-1} on each iteration.

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