

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
15.053 – **Optimization Methods in Management Science** (SPRING 2013)
Information about Quiz 3.

Quiz 3 will be a 25-minute quiz. The problems will be drawn from the problem types described below. We will assume that all linear programs are maximization problems.

The italicized words are vocabulary that may be used in the questions on the quiz.

Material from lectures 4 and 5.

1. Given a tableau that is in canonical form, determine the *entering variable* or determine that the current solution is optimal.
2. Know how to identify the next basic feasible solution and the leaving variable or determine that the problem is *unbounded* (i.e., the objective value is *unbounded* from above).
3. Given a tableau, be able to identify whether the corresponding bfs is *degenerate*, and understand the implications.
4. Be able to identify whether an optimal tableau has *alternative optimal solutions*, and if so, know how to compute alternative optimal solutions.
5. Given an optimal tableau in canonical form, be able to identify if the problem has a *unique optimum*, an *edge of optimal solutions*, or a *ray of optimal solutions*.
6. Know how to apply *Bland's rule* to avoid cycling.
7. Given a linear program (not necessarily in standard form), be able to setup the problem for *Phase I* of the simplex algorithm to find an initial bfs.

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