

# 6.251/15.081J Recitation 2

David B. Brown\*

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## 1 Examples

**Example 1.1.** [1], exercise 2.4.

**Example 1.2.** [1], exercise 2.16.

**Example 1.3.** [1], exercise 2.10.

**Example 1.4.** The following statements refer to a nonempty polyhedron  $P$  in standard form. If true, prove. If false, provide a counterexample.

- (a) Every system with degenerate basic feasible solutions has redundant equality constraints.
- (b) Every system with redundant equality constraints has degenerate basic feasible solutions.
- (c) If  $\mathbf{0} \in P$ , then  $\mathbf{0}$  is a BFS, and it is degenerate.
- (d) Every degenerate basic solution generated by the constraints forming  $P$  must also be feasible.
- (e) Same as (d), but  $P$  is a *bounded* polyhedron.

**Example 1.5.** [1], exercise 2.15.

**Example 1.6.** [1], exercise 2.14.

## References

- [1] Bertsimas, D.; Tsitsiklis, J.N. *Introduction to Linear Optimization*. Athena Scientific, 1997.