Smith   Math 290   Fall 2008

Proof V-1

- First due date **Thursday, October** 9.

- Turn in the the final version of your work on a separate sheet of paper with this page stapled in front.

- Do not include scratch work in your submission.

- Follow the Writing Guidelines of the Grading Rubric.
  (http://math.ups.edu/~bryans/Current/Fall_2008/290inf_Fall2008.html#tth_sEc5.1)

- Retry: Only use material from the relevant section or earlier.

- Retry: Start over using a new sheet of paper.

- Retry: Restaple with new attempts first and this page on top.

"Obvious" is the most dangerous word in mathematics." – Eric Temple Bell

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V-1 (Section LDS) Extend Theorem DLDS by proving the following theorem.

1. **Theorem 1** *DLDSPV (Dependency in Linearly Dependent Sets, Previous Vectors) Suppose that $S = \{\mathbf{u}_1, \mathbf{u}_2, \mathbf{u}_3, ..., \mathbf{u}_n\}$ is a set of vectors listed in order. Then S is a linearly dependent set if and only if there is an index t, $1 \leq t \leq n$ such that $\mathbf{u}_t$ is a linear combination of the vectors $\mathbf{u}_1, \mathbf{u}_2, \mathbf{u}_3, ..., \mathbf{u}_{t-1}$ which have subscripts smaller than t.*

Read carefully. Note that Theorem DLDS in the text does not require the set S to be written in order and that Theorem DLDSPV requires the vectors be written in order.