Smith Math 290 Spring 2013

Project V-2

Accepted **Not Accepted**

I affirm this work abides by the university's Academic Honesty Policy.

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Print Name, then Sign

- First due date **Tuesday, March 12**
- Turn in your work on a separate sheet of paper with this page stapled in front.
- Do not include scratch work in your submission.
- There is to be **no collaboration** on any aspect of developing and presenting your proof. Your only resources are: you, the course textbook, me, and pertinent discussions that occur **during class.**
- Follow the Writing Guidelines of the Grading Rubric in the course information sheet.
- Retry: Only use material from the relevant section of the text or earlier.
- Retry: Start over using a new sheet of paper.
- Retry: Restaple with new attempts first and this page on top.

"'Know thyself?' If I knew myself, I'd run away." – Johann von Goethe

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V-2 (Section O) Prove both of the following Theorems.
The following two results (especially the first) might seem simple but they provide an excellent opportunity to learn how to correctly present a proof involving linear independence. So make sure to focus on the using correct notation to present the details.

Theorem 1 *(Contract) Suppose $n \geq 2$ and that $S = \{\vec{v}_1, \vec{v}_2, \cdots, \vec{v}_{n-1}, \vec{v}_n\}$ is a linearly independent set of vectors. Then $T = \{\vec{v}_1, \vec{v}_2, \cdots, \vec{v}_{n-1}\}$ is also linearly independent.*

Theorem 2 *(Expand) Suppose $S = \{\vec{v}_1, \vec{v}_2, \cdots, \vec{v}_{n-1}, \vec{v}_n\}$ is a linearly independent set of vectors and that $\vec{z} \notin \langle S \rangle$. Then $W = \{\vec{v}_1, \vec{v}_2, \cdots, \vec{v}_{n-1}, \vec{v}_n,\ \vec{z}\}$ is also linearly independent.*

[These theorems are the keys to building larger (or smaller) linearly independent sets.]
