Math 24
Spring 2012
Wednesday, May 16
Additional Homework Question

Suppose V is an n-dimensional vector field over the field F, where F is either $\mathbb{R}$ or $\mathbb{C}$, and $\langle, \rangle$ denotes the standard inner product on F^n. Let $\beta = \{v_1, v_2, \ldots, v_n\}$ be an ordered basis for V. For $v, w \in V$, define

$$\langle\langle v, w \rangle\rangle = \langle [v]_\beta, [w]_\beta \rangle .$$

(a.) Show that $\langle\langle, \rangle\rangle$ is an inner product on V.

(b.) Show that β is an orthonormal set for this inner product.