Directions. Please submit your answer to the following problem in a \LaTeX-prepared document. Class participants are encouraged to prepare solutions in a collaborative mode but to prepare their to-be-submitted write-ups individually. The consequences of sharing files, electronic or otherwise, are discussed in the course syllabus.\footnote{If the wording of this problem was discussed in detail in the classroom, the course instructor expects to see similar phrases and sentences in reading the submissions.}

Please include the problem number along with a statement of the problem in your submission. Please also include your e-mail address.

**Problem.** Prove the following theorem.

**Norm Defined by an Inner Product.** Let $V$ denote an inner-product space over $\mathbb{R}$. Then the function from $V$ into $\mathbb{R}$, denoted by $\| \cdot \|$, and defined by

$$
\| v \| = \sqrt{\langle v, v \rangle}, \forall v \in V
$$

is a norm on $V$. 