

Quiz: Section 6.2

Name: _____

Signature: _____

SHOW ALL YOUR WORK!

Mark each statement as **True** or **False**.

- () Every orthogonal set in \mathbb{R}^n is linearly independent.
- () If $S = \{\mathbf{v}_1, \mathbf{v}_2, \dots, \mathbf{v}_p\}$ has the property that $\mathbf{v}_i \cdot \mathbf{v}_j = 0$ if $i \neq j$, then S is an orthonormal set.
- () If the columns of an $m \times n$ matrix A are orthonormal, then the linear mapping $\mathbf{x} \mapsto A\mathbf{x}$ preserves length.
- () The orthogonal projection of y onto v is the same as the orthogonal projection of y onto αv where $\alpha \neq 0$.
- () An orthogonal matrix is invertible.
- () A matrix with orthonormal columns is an orthogonal matrix.
- () If $\text{span } S = V$ and \tilde{S} is a set of more than p vectors in V , then \tilde{S} is linearly dependent.
- () If U is an orthogonal matrix then its rows are orthonormal.
- () If u, v are vectors in \mathbb{R}^n , then $(\mathbf{u} \cdot \mathbf{v}) \cdot \mathbf{v}$ is well defined.
- () If W is a subspace of V then W^\perp is a subspace of V .