$u, v \in V$, $\{e_i\}$ ST. BASIS

$$\langle u, v \rangle = \left\langle \sum_i u_i e_i, \sum_j v_j e_j \right\rangle = \sum_{i,j} \langle u_i e_i, v_j e_j \rangle = \sum_{i,j} u_i v_j \underbrace{\langle e_i, e_j \rangle}_{\neq 0 \text{ only for } i = j}$$

$$= \sum_i u_i v_i = U^T V$$

$\{w_i\}$ GENERIC BASIS

$$\langle u, v \rangle = \sum_{i,j} u_i v_j \underbrace{\langle w_i, w_j \rangle}_{w_i^T w_j} = u^T W^T W v$$

$$= (W u)^T (W v)$$