Math 1553 Worksheet §§6.1–6.5

1.   **a)** True or false: If u, v, w are vectors in $\mathbf{R}^n$ with $u \perp v$ and $v \perp w$, then $u \perp w$.

b) Find the standard matrix B for proj_L, where $L = \text{Span}\left\{\begin{pmatrix} 1 \\ 1 \\ -1 \end{pmatrix}\right\}$.

2. Find an orthogonal basis for the subspace of $\mathbf{R}^4$ spanned by $\begin{pmatrix} 1 \\ -1 \\ 1 \\ 1 \end{pmatrix}$, $\begin{pmatrix} 6 \\ -2 \\ 2 \\ 6 \end{pmatrix}$, and $\begin{pmatrix} 4 \\ 20 \\ -14 \\ 10 \end{pmatrix}$.

3. Find the best fit line $y = Ax + B$ through the points $(0, 0)$, $(1, 8)$, $(3, 8)$, and $(4, 20)$.