Math 221
Class Exercise: Mar. 28

Let $U = \text{Span}\left\{\begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix}\right\}$ and $W = \text{Span}\left\{\begin{bmatrix} 2 \\ 1 \\ 1 \end{bmatrix}, \begin{bmatrix} 0 \\ 1 \\ 1 \end{bmatrix}\right\}$

Find a matrix P so that Px is the projection of x onto U along W.

1. Check that $P^2 = P$.
2. Check that Px is in U for any $x \in \mathbb{R}^3$.
3. Check that $Pw = 0$ for any $w \in W$.