1. Find two matrices $A$ and $B$ such that $\text{Col}(A) = \text{Col}(B)$, and $\text{Nul}(A) = \text{Nul}(B)$, but $A \neq B$.

2. (Section 4.5 #32) Prove that if $V$ and $W$ are isomorphic vector spaces, then $\dim(V) = \dim(W)$.

3. Suppose that $H$ is a set of points in $\mathbb{R}^n$. Prove that the following three statements are equivalent.
   
   (a) $H$ is a subspace of $\mathbb{R}^n$.
   (b) $H = \text{Col}(A)$ for some matrix $A$.
   (c) $H = \text{Nul}(B)$ for some matrix $B$. 