Additional Problem One

Let $A$ be an $m \times n$ matrix of rank $k$. Suppose that there exists a vector $x \in \mathbb{R}^n$ such that $Ax = b$. Prove that there is a vector $\tilde{x} \in \mathbb{R}^n$ with no more than $k$ nonzero entries such that $A\tilde{x} = b$. 
