

Math 253 – Linear Algebra

Spring 10

Individual Problems #1, Due Friday, February 5

1. Determine whether the following statements are true or false, and justify your answer.
 - (a) If the matrix A is in reduced row echelon form, and the matrix B is obtained from the matrix A by deleting a row, then the matrix B is in reduced row echelon form.
 - (b) If the matrix A is in reduced row echelon form, and the matrix B is obtained from the matrix A by deleting a column, then the matrix B is in reduced row echelon form.
 - (c) For any 3×3 matrices A and B , $\text{rank}(A + B) = \text{rank}(A) + \text{rank}(B)$.
2. Suppose that \vec{v}_1 and \vec{v}_2 are vectors in \mathbb{R}^n . Prove that if \vec{v}_1 is not in $\text{Span}\{v_2\}$, then $\vec{v}_1 + \vec{v}_2$ is not in $\text{Span}\{v_2\}$.