[2 + 2 + 2 + 4 pts.] Answer the following questions.

(a) If $V = \text{span}(S)$, then every vector in $V$ can be written uniquely as a linear combination of vectors in $S$. True or False? Explain.

(b) A finite dimensional vector space has finitely many bases. True or False? Explain.

(c) The matrix $A = \begin{pmatrix} 1 & 0 & 0 & 2 \\ 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}$ is in RREF. True or False? Explain.

(d) Find the null space of the matrix $A = \begin{pmatrix} 1 & 1 & 0 \\ 2 & 1 & 1 \\ 3 & 2 & 1 \end{pmatrix}$, a basis of it and its dimension.