Math 320 (Smith): Optional Quiz 1

1. Find a square matrix \( A \) with column vectors in \( \mathbb{R}^5 \) such that the nullspace is a 2-parameter family of vectors in \( \mathbb{R}^5 \). Find a basis for the column space of \( A \). For a particular choice of \( b \) in the column space of \( A \), find the solution to \( Ax = b \).

2. For 2 linear algebraic equations with 4 unknowns written in matrix-vector notation as \( Ax = b \), what are all the possibilities for the nullspace of \( A \)? for the column space of \( A \)?