Solutions for Take-Home Quiz due 2/4

1. Find a set (with at most five elements) which spans the space
   \( V = \{a + bx + cx^2 \text{ such that } a + c = 0 \text{ with } a, b, c \text{ real numbers}\}. \)

   One possibility: \( \{x, x^2 - 1\} \).

2. Find a set (with at most five elements) which spans the space \( W' \) which is a subset of two-by-two matrices with entries:
   \[
   \begin{pmatrix}
   a & b \\
   c & a + b
   \end{pmatrix}
   \]
   such that \( b + c = 0 \) and \( a, b, c \) are real numbers.

   One possibility:
   \[
   \left\{ \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}, \begin{pmatrix} 0 & 1 \\ -1 & 1 \end{pmatrix} \right\}
   \]