1. Find an element in the span of the set \([-1, 2, 1], [2, 5, 1]\) which has its third entry equal to zero and its first two entries positive.

2. Proposition 1: Let \(A\) be an element of a vector space \(V\). Then \((-1)A = -A\).

   Let’s prove this. First, understand the meaning of \((-1)A\) and \(-A\):

   \((-1)A\) is:

   \(-A\) is:

   Let’s show that \((-1)A\) has the property that \(-A\) has (justify each step with a vector space property or a property of ordinary arithmetic):

   \[
   A + (-1)A = 1A + (-1)A \\
   = (1 + (-1))A \\
   = _A \\
   = _
   \]

   State conclusion:

3. Explain why each of the following is always True, sometimes True, or False.
   (a) A subset of an independent set is independent.

   (b) A subset of a dependent set is dependent.

   (c) If a set of elements of a vector space is dependent, then each element of the set is a linear combination of other elements of the set.

   (d) A set of vectors which contains the zero vector is dependent.