Math 1553 Supplement, §5.1 and §5.2

These are additional practice problems after completing the worksheet.

1. Find a basis $\mathcal{B}$ for the (-1)-eigenspace of $Z = \begin{pmatrix} 2 & 3 & 1 \\ 3 & 2 & 4 \\ 0 & 0 & -1 \end{pmatrix}$

2. Give an example of matrices A and B which have the same eigenvalues and the same algebraic multiplicities for each eigenvalue, but which are *not* similar. Justify why they are not similar.

3. Using facts about determinants, justify the following fact: if A is an $n \times n$ matrix, then A and A^T have the same characteristic polynomial.