Math 218D
Week 12 Quiz

1. Which of the following could be eigenvalues/eigenvectors of a $2 \times 2$ real symmetric matrix? Please circle your answer(s).
   a) $\lambda_1 = -1, w_1 = (1, 1); \lambda_2 = 1, w_2 = (1, -1)$.
   b) $\lambda_1 = 2, w_1 = (1, 1); \lambda_2 = -1, w_2 = (1, 2)$.
   c) $\lambda_1 = i, w_1 = (1, i); \lambda_2 = -i, w_2 = (1, -i)$.

2. The matrix

$$A = \begin{pmatrix} 1 & 1 & -2 \\ 1 & 5 & -6 \\ -2 & -6 & 11 \end{pmatrix},$$

is positive-definite. Find the $LDL^T$ decomposition of $A$. 