

Math 218D

Quiz 9

1. Determine whether or not the following symmetric matrix is positive-definite:

$$A = \begin{pmatrix} 5 & -3 \\ -3 & 2 \end{pmatrix}.$$

2. Which of the following could be eigenvalues/eigenvectors of a 2×2 symmetric real matrix?

- a) $\lambda_1 = -1, w_1 = (1, 1); \lambda_2 = 1, w_2 = (1, -1)$.
- b) $\lambda_1 = 1, w_1 = (-1, 0); \lambda_2 = 3, w_2 = (0, 1)$.
- c) $\lambda_1 = 2, w_1 = (1, 1); \lambda_2 = -1, w_2 = (1, 2)$.
- d) $\lambda_1 = i, w_1 = (1, i); \lambda_2 = -i, w_2 = (1, -i)$.