

1. 請框出答案. 2. 不可使用手機、計算器，禁止作弊!

1. Find an unitary matrix U and a diagonal matrix D such that $D = U^{-1}AU$, where

$$A = \begin{bmatrix} 1 & 2 - 2i & 0 \\ 2 + 2i & -1 & 0 \\ 0 & 0 & 3 \end{bmatrix}$$

Solution :

Section 9-3 problem 7.

2. Prove that an $n \times n$ matrix U is unitary if and only if the rows of U forms an orthonormal basis for \mathbb{C}^n .

Solution :

Section 9-2 problem 35.