姓名:_____ 葉均承 應數一線性代數

學號: _____ **Quiz 9** 考試日期: 2020/06/04

不可使用手機、計算器，禁止作弊!
背面還有題目

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

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

9.3 ※5

$$U = \frac{1}{\sqrt{2}} \begin{bmatrix} -i & 0 & i \\ 1 & 0 & 1 \\ 0 & \sqrt{2} & 0 \end{bmatrix}$$

$$D = \begin{bmatrix} -1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

2. Find A^{-1} if $A = \begin{bmatrix} 1 & i \\ 1+i & 2+i \end{bmatrix}$

9.2 ※5

$$\frac{1}{3} \begin{bmatrix} 2+i & -1 \\ -1-i & 1 \end{bmatrix}$$

3. Using the Gram-Schmidt process to transform the basis $\{[2+i, 1+i], [1+i, i]\}$ into an orthogonal basis.

※ 9.2 ※ 27

$\{[2+i, 1+i], [1-i, -2+i]\}$