Tutorial 10

Problem 1 Let $T : \mathbf{C}^2 \longrightarrow \mathbf{C}^2$ be defined by the matrix
$A = \begin{bmatrix} 1 & i \\ -i & 2 \end{bmatrix}$.

(a) Show that T is self adjoint.

(b) $\alpha = \{\mathbf{v}_1 = (\frac{1}{\sqrt{2}}, \frac{i}{\sqrt{2}}), \mathbf{v}_2 = (\frac{i}{\sqrt{2}}, \frac{1}{\sqrt{2}})\}$ is an orthonormal basis of $\mathbf{C}^2$. Find the associated matrix $[T]^{\alpha}_{\alpha}$. Shows that it is again self adjoint.