MATH 4242 Quiz 7

Name:_____

Student Id:_____

Find all the (complex) invariant subspaces of $\begin{pmatrix} 0 & 1 \\ -1 & 0 \end{pmatrix}$

Proof. The characteristic polynomial is $x^2 + 1$, so there are two complex eigenvalues i and $-i$. The eigenvectors are $v_1 = (-i, 1)$ and $v_2 = (i, 1)$. Since the matrix is complete (diagonalizable) so its complex invariants subspaces are spanned by the eigenvectors: $\{0\}, \operatorname{span}(v_1), \operatorname{span}(v_2)$ and $\mathbb{C}^2$. $\qquad\square$