10B:

(10.24) Let $T \in \mathcal{L}(V)$. By (3.69), T is invertible if and only if T is injective. On the other hand, 0 is an eigenvalue of T if and only if $T - 0I = T$ is not injective. Hence T is invertible if and only if 0 is not an eigenvalue of T. As $\det(T) = \det(T_{\mathbb{C}})$ and $\det(T_{\mathbb{C}})$ is the product of all eigenvalues (Here if V is a complex vector space, then $T_{\mathbb{C}} = T$). It follows that T is invertible if and only if $\det(T) \neq 0$.