

Solution (#917) We have by Proposition 3.191(a) that a real number λ is an eigenvalue if and only if $c_A(\lambda) = 0$. So

$$\begin{aligned} \lambda \text{ is an eigenvalue of } A &\iff c_A(\lambda) = 0 \\ &\iff \det(\lambda I - A) = 0 \\ &\iff \det((\lambda I - A)^T) = 0 \\ &\iff \det(\lambda I - A^T) = 0 \\ &\iff c_{A^T}(\lambda) = 0 \\ &\iff \lambda \text{ is an eigenvalue of } A^T. \end{aligned}$$