Exercise 16. 4. 2015

1. Let $A \in M_{n\times n}(\mathbb{R})$ be a matrix for which all eigenvalues are different from each other. Show that the vector space $\mathbb{R}^n$ admits the splitting

$$\operatorname{im} A \;\oplus\; \ker A \;\;=\;\; \mathbb{R}^n$$

as a direct sum of two A–invariant subspaces.