Exercises

E24.1 [1V0] Topics:matrix, determinant. Note:*exercise 4 in the pseudo-homework of 14/3/2013.*

(a) Let $A \in \mathbb{R}^{2\times 2}$ be a 2 by 2 matrix. Identifying $\mathbb{R}^{2\times 2}$ with $\mathbb{R}^4$, calculate the gradient of the determinant, and verify that it is nonzero if and only if the matrix is nonzero.

(b) Let Z be the set of matrices $\mathbb{R}^{2\times 2}$ with zero determinant. Show that it is a closed set with an empty interior.

Solution 1. *[1V1]*