

Math 124 – Homework 2

Due date: 3 March 2009 Tuesday

Please take your homework solutions to room SA144, Ali Adali's office before 17:00.

- 1) Let $\phi : \mathbb{R}^n \rightarrow \mathbb{R}^n$ be a positive definite, symmetric, bilinear form, $n \geq 1$. For $x, y \in \mathbb{R}^n$ define $d(x, y) = \phi(x - y, x - y)$. Is d a metric?
- 2) If $T : \mathbb{R}^n \rightarrow \mathbb{R}^n$ is a distance preserving map, show that T is bijective.
- 3) Show that in \mathbb{R}^2 , a reflection about the x -axis, followed by a rotation by θ is the same map as a the reflection about a line L .