1096-47-728 **Arsalan Chademan Shademan*** (achademan@gmail.com), 14414 Rancho Del Prado Trl., San Diego, CA 92127. *Angle reserving linear ransformations.* Preliminary report.

Let E be a real vector space equipped with an inner product $x \cdot y$ and the corresponding norm $\|x\|$. We assume that E is non trivial $\dim E \geq 1$, and $T : E \to E$ is a linear transformation. As usual T is *isometric* if $\|Tx\| = \|x\|$ for all $x \in E$; T is a *similarity* if it is isometric up-to a positive constant. It is well known that T is a similarity if and only if it preserves orthogonality, i.e. $x \cdot y = 0$ implies $Tx \cdot Ty = 0$ for all $x, y \in E$. A similarity preserves any angle which means that for all $x, y \in E$ the equality $\|x\| \, \|y\|(Tx \cdot Ty) = \|Tx\| \, \|Ty\|(x \cdot y)$ holds. In this paper we prove that in an inner product space, linear transformations preserving angles with a given single magnitude $0 < \alpha < \pi$, are similarities. In other words, for a linear transformation T to be a similarity it is sufficient that there exists an $0 < \alpha < \pi$ such that for all $x, y \in E$, the equality $x \cdot y = \|x\|\|y\| \cos \alpha$ implies $Tx \cdot Ty = \|Tx\|\|Ty\| \cos \alpha$. (Received September 09, 2013)