# MAC0331 - Lista 1

Matheus T. de Laurentys, 9793714

April 26, 2020

**Q 1:**

**Q 12:**
As seen in exercise 8, the dual of the triangulation of a polygon is a tree. Let $T$ be a triangulation of the polygon $P$ and $G$ be its associated (dual) tree. Let $G'$ be equal to $G$ after a rotation. There exists anther triangulation $T'$ of $P$ that is equal to $T$ except for a swap in the diagonal of a single quadrilateral formed by two adjacent triangles of $T$ such that $G'$ is its associated (dual) tree.

In the context of triangulation/tree dual association, a rotation in $G$ is equivalent to a diagonal swap in $T$.

**Q 13:** Professor Maqui Esperto is incorrect. The original proof goes as follow: choose any u,v,w consecutive vertices of P. Draw the line segment $\overline{uw}$. If it does not cross any edge of the polygon, it is a diagonal. If it does, move the segment towards $v$. If $t$ is the last vertex crossed, $\overline{vt}$ is a diagonal. The change does not work because there is no guarantee that $u$ and the new $t$ are not adjacent, let alone, that if they are not, that they form a diagonal.z