Exercise 1 (10 points)
How many triangulations does a convex polygon in $\mathbb{R}^2$ with $n \geq 3$ vertices have?

Exercise 2 (10 points)
The Euclidean minimum spanning tree (EMST) of a finite point set $M \subset \mathbb{R}^2$ is a spanning tree for which the sum of the edge lengths is minimum (among all spanning trees of $M$). Show:

a) Every EMST of $M$ contains a closest pair, i.e. an edge between two points $p, q \in M$, that have minimum distance to each other among all point pairs in $\binom{M}{2}$.

b) Every Delaunay Triangulation of $M$ contains an EMST of $M$.

Exercise 3 (10 points)
Consider a triangulation $\mathcal{T}$ of a finite point set $P \subset \mathbb{R}^2$. Show that there is a point $p \in P$ which is incident with at most 5 edges in $\mathcal{T}$.