

In the presented work we deal with the theory of Voronoi tessellations. We deal with the properties of general Voronoi tessellations, but we focus mainly on those tessellations that are randomly generated. We study the point processes that create random Voronoi tessellations. We define the most common Poisson process. We focus on the renewal processes, specifically the ordinary renewal process, the delayed process and the equilibrium renewal process. With the help of these processes, we build a one-dimensional version of the Poisson process. We examine Voronoi tessellations primarily on a semi-straight line. Later, we generalize the obtained results for the line and the plane. In the conclusion of the work we deal with Voronoi tessellations in space.