

GEOMETRIC PROPERTIES OF BILLIARD MATHEMATICS ON THE RECTANGLE DOMAIN

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ABSTRACT

The purpose of this study is to determine the properties of mass point path in mathematical billiards with rectangular domains. The properties of this mass point path will be reviewed geometrically. The mathematical billiard is the idealization of a billiard game with the condition that the ball speed will not decrease. Just as in ordinary billiards performed on restricted areas (on the table), the domain of the mathematical billiards is also limited but the domain form is not just a rectangle. The domain form of a mathematical billiard can be any polygon, circle, ellipse, and so on. The billiard balls are viewed as a mass point. The point of mass moves at a constant velocity and is reflected elastically by domain boundaries without changing the speed of the mass point movement. The reflection that occurs following Snellius's law, ie the magnitude of the angle comes with the reflection angle. The results show that the mathematical billiards with the square domain have closed paths, the mathematical billiards with the square domains have angles of one or two sizes, the mathematical billiard with the rectangle domain has a normal set of parallel lines or two perpendicular line sets, can be either simple closed curves or non-simple closed curves, and trajectories of mass points may be repetitive or non-repetitive, or finite.

Kata Kunci: *dynamic billiard, geometry, rectangular properties*