

BUILDING STUDENTS' UNDERSTANDING OF QUADRATIC EQUATION CONCEPT USING NAÏVE GEOMETRY

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Abstract

The purpose of this research is to know how Naïve Geometry method can support students' understanding about the concept of solving quadratic equations. In this article we will discuss one activities of the four activities we developed. This activity focused on how students linking the Naïve Geometry method with the solving of the quadratic equation especially on how student bring geometric solution into algebraic form. This research was conducted in SMP Negeri 1 Palembang. Design research was chosen as method used in this research that have three main phases. The results of this research showed that manipulating and reshaping the rectangle into square could stimulate students to acquire the idea of solving quadratic equations using completing perfect square method. In the end of the meeting, students are also guided to reinvent the general formula to solve quadratic equations.

Keywords: Quadratic Equations, Design Research, Naïve Geometry, PMRI

Abstrak

Tujuan dari penelitian ini adalah untuk mengetahui bagaimana metode Naïve Geometri dapat membantu pemahaman siswa tentang konsep penyelesaian persamaan kuadrat. Pada artikel ini akan dibahas salah satu aktivitas dari empat kegiatan yang kami kembangkan. Kegiatan ini berfokus pada bagaimana siswa mengaitkan metode Naïve Geometri dengan penyelesaian persamaan kuadrat. Penelitian dilaksanakan di SMP Negeri 1 Palembang. Metode penelitian yang digunakan dalam penelitian ini adalah desain riset yang dilakukan melalui 3 tahap utama. Hasil dari penelitian ini menunjukkan siswa dapat memahami konsep penyelesaian persamaan kuadrat dengan cara melengkapkan kuadrat sempurna melalui metode naïve geometry, yang diinterpretasikan sebagai manipulasi bentuk persegi panjang menjadi bentuk persegi. Pada akhir pertemuan, siswa juga diarahkan untuk menemukan rumus bentuk umum penyelesaian persamaan kuadrat.

Kata kunci: Persamaan Kuadrat, *Design Research*, Naïve Geometry, PMRI

In emphasizing the importance of learning algebra, Tall and Thomas (French, 2002) states: "there is a stage in the curriculum when the introduction of algebra may make-Simple Things hard, but not teaching algebra will soon render it impossible to make-the hard things simple ". However, it is not supported by the learning conditions in Indonesia, which is only emphasizes the use of an algorithm or formula, especially on the topic of the solving quadratic equation (Zakaria & Maat, 2010).

Zakaria & Maat (2010) showed that some errors in solving quadratic often occurs due to the weakness in understanding the concept. French (2002) found that the common mistakes made by students is assuming that $(a + b)^2$ is equivalent to $a^2 + b^2$. Zakaria & Maat (2010) research also showed that most of students still make mistakes in terms of transformation and multiplication of