New P Formula To Calculate the Determinants of 3x3 Matrices in a More Algebraic Way

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Various investigations propose a misconception of algebra, leading students to resolve problems in a deficient and careless way. Algebraic exercises constitute the basis for problem solving, that include symbols and variables. Which, in the case of 3x3 matrices, have assigned letters and subscripts by their row and column. This research used determiners with 3x3 square matrices because it is considered an original matrix. The formula was compared by complementary minors with the new suggested formula named P formula, to calculate the determiners of these matrices. The P formula redefines the concept in a more algebraic manner, where it does not use vectors in the matrices. Hence, it was created to work as a base to develop a new formula that simplifies the calculation of the 3x3 matrix determiner, eliminating the rows and columns, adding letter, symbols, and numbers. The research identified existing patterns in the formula by complementary minors, applying it to the P formula. Then, they were incorporated to prove the efficiency of the formula. Doing tests that threw results equivalent to the formula by complementary minors with 0% error range. Based on this, the matrices could transfer it to more algebraic concepts. This will provide a new strategy that serves as an alternate method to enhance the students performance in linear algebra. This aims to promote the development and critical thinking of students in the field of mathematics. Also be a shorter and more effective process in last-minute calculations.

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