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On a Generalized Pell Equation Studied by Euler and Sadek,
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Abstract

In this paper, we follow the path set forth by Euler and Sadek in their study of a generalized Pell equation. Euler and Sadek effectively studied the positive rational solutions of the Pell equation in question. Here, we study the positive integer solutions of this equation. Indeed, by imposing additional conditions on certain parameters, we demonstrate that the positive rational solutions produced by a certain system of Euler and Sadek turn out to be positive integer solutions. Furthermore, the positive integer solutions produced by this system are the only positive integer solutions of the Pell equation in question.