Title: Solutions of some generalized Ramanujan–Nagell equations via binary quadratic forms

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Let $h$ be the class number of binary quadratic forms of discriminant $-4d$, where $d$ is odd and $I$ is the identity form $x^2 + dy^2$. Let $\lambda k^n$ be represented by $I$, where $\lambda$ is a prime power represented by $I$ and $k$ is prime. Then we show that $k^r$ is represented by $I$ for some $r$ dividing $h$ and representations of $\lambda k^n$ by $I$ arise out of the representations by $I$ of $\lambda$ and $k^r$. As an application we solve several generalized Ramanujan–Nagell equations of the type $x^2 + d = \lambda k^n$.

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