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Title: On the Diophantine equation $f(x)f(y) = f(z^2)$

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Let $f \in \mathbb{Q}[X]$, $\deg(f) \geq 2$, in this paper we extend the Diophantine equation $f(x)f(y) = f(z)^2$ for $f(X) = X^2 - tX$ from $t = 2k$ to $t = 2k+1$, then we mainly consider the Diophantine equation $f(x)f(y) = f(z^2)$, and prove that there are infinitely many nontrivial positive integer solutions for some special cases.

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