Abstract. Let $X$ be a real normed space, $Y$ a Banach space and $f : X \to Y$. We prove the Ulam-Hyers stability theorem for the cubic functional equation

$$f(2x + y) + f(2x - y) - 2f(x + y) - 2f(x - y) - 12f(x) = 0$$

in restricted domains. As an application we consider a measure zero stability problem of the inequality

$$
\|f(2x + y) + f(2x - y) - 2f(x + y) - 2f(x - y) - 12f(x)\| \leq \epsilon
$$

for all $(x, y)$ in $\Gamma \subset \mathbb{R}^2$ of Lebesgue measure $0$. 

Cubic functional equations on restricted domains of Lebesgue measure zero
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