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Murat Akman, Agnid Banerjee and Mariana Smit Vega Garcia*, smitvem@wwu.edu. *On a Bernoulli-type overdetermined free boundary problem.*

We study a Bernoulli-type free boundary problem in the context of certain PDEs. In particular, we show that if K is a bounded convex set satisfying the interior ball condition and $c > 0$ is a given constant, then there exists a unique convex domain U containing K and a function u which solves the PDE in $U \setminus K$, has continuous boundary values 1 on the boundary of K and 0 on the boundary of U , such that $|\nabla u| = c$ on the boundary of U . Moreover, we study the regularity of the boundary of U . (Received August 07, 2021)