Sebastian I Troncoso* (troncosomath@gmail.com), Department of Mathematics, 619 Red Cedar Road, C212 Wells Hall, East Lansing, MI 48824. Bound for preperiodic points for maps with good reduction.

Let $K$ be a number field and let $\phi$ in $K(z)$ be a rational function of degree $d \geq 2$. Let $S$ be the places of bad reduction for $\phi$ (including the archimedan places). Let $Per(\phi, K)$, $PrePer(\phi, K)$, and $Tail(\phi, K)$ be the set of $K$-rational periodic, preperiodic, and purely preperiodic points of $\phi$, respectively. This work presents two main results. The first result gives a bound for $-\vert PrePer(\phi, K) \vert$ in terms of the number of places of bad reduction $\vert S \vert$ and the degree $d$ of the rational function $\phi$. This bound significantly improves a previous bound given by J. Canci and L. Paladino 2014. For the second result, assuming that $\vert Per(\phi, K) \vert \geq 4$ (resp. $\vert Tail(\phi, K) \vert \geq 3$), we prove bounds for $\vert Tail(\phi, K) \vert$ (resp. $\vert Per(\phi, K) \vert$) that depend only on the number of places of bad reduction $\vert S \vert$ (and not on the degree $d$). We show that the hypotheses of this result are sharp, giving counterexamples to any possible result of this form when $\vert Per(\phi, K) \vert < 4$ (resp. $\vert Tail(\phi, K) \vert < 3$). (Received September 14, 2016)