1116-VN-2214 **Brandon Rafal Epstein*** (brandonmath774@gmail.com), 47 Hunting Hollow Court, Dix Hills, NY 11746. *Maximizing the Number of Lattice Points on a Strictly Convex Curve.*

We obtain an upper bound for the maximum number of integral lattice points on the graph of a twice differentiable convex function $f : [0, N] \to [0, N^\gamma]$, where $\gamma > 0$ by generalizing an argument for $\gamma = 1$ to all γ between $\frac{1}{2}$ and 2. This method was based on the asymptotes of sums involving the Euler totient function, which we extended to prove the general case. Moreover, we also strengthen upper bounds for smooth convex functions $f : [0, N] \to [0, N]$ with restrictions on higher derivatives. Specifically, we tighten an upper bound on the number of lattice points on a curve with positive first, second, and third derivatives by modifying a method of Bombieri and Pila. We also examine the problem of finding the maximal number of lattice points on a smooth convex curve $y = f(x)$, subject to the condition $1 < f''(x) < 2$. We conjecture that this maximum is attained for the curve $y = \frac{3}{4}x^2$, which has $2\sqrt{\frac{N}{3}} - O(1)$ lattice points. (Received September 22, 2015)