1010-41-87 **Q. I. Rahman** and **Q. M. Tariq*** (tqazi@vsu.edu), Department of Mathematics & computer Science, Virginia State University, Petersburg, VA 23806. *On 'self-reciprocal' polynomials.*

Let f be a polynomial of degree at most n such that $|f(z)| \leq 1$ on the unit circle. By Bernstein's inequality $|f'(z)| \leq n$ on the same cicle,where equality holds if and only if $f(z) \equiv \mathrm{e}^{\mathrm{i}\gamma} z^n$. If f has no zeros inside the unit circle then the upper bound for $|f'(z)|$ can be replaced by $n/2$. The same is true if f satisfies the condition $f(z) \equiv z^n \overline{f(1/\overline{z})}$, which implies that f cannot have more than $n/2$ zeros inside the unit circle. A polynomial f that satisfies the condition $f(z) \equiv z^n f(1/z)$ also cannot have more than $n/2$ zeros inside the unit circle but, curiously enough, there exists a polynomial f of this kind for which $\max_{|z|=1} |f'(z)|$ can be at least as large as $n-1$ times $\max_{|z|=1} |f(z)|$; the precise upper bound remains unknown except for $n=2$. The purpose of the talk is to present some observations about polynomials that satisfy the condition $f(z) \equiv z^n f(1/z)$, and their relevance. (Received August 21, 2005)