1010-30-90 **Mohammed A. Qazi*** (qazima@aol.com), Department of Mathematics, Tuskegee University, Tuskegee, AL 36088. *Extensions of a result of P. Turán about the local behaviour of polynomials.*

In a paper published in 1946, P. Turán raised the following problem: Let $f(z)$ be a polynomial of degree at most n. Suppose that, on the unit circle, the absolute value of $f(z)$ attains its maximum at the point $z = 1$. How near to this point can there be a zero a of $f(z)$, firstly if (i) a is a point of the unit circle, and secondly if (ii) no restriction is made about the position of a? Turán himself pointed out that necessarily $|a - 1| \geq 1/n$, and proved that, in case (i), the nearest positions of a zero are $e^{\pm i\pi/n}$, and that, if $f(z)$ vanishes at one of these two points then $f(z)$ must be of the form $c(1 + z^n)$. Interesting contributions to the problem proposed by Turán were made by C. Hyltén Cavalius, L. Hörmander, and R. P. Boas. We propose to discuss some of their results and also present some of our own observations. (Received August 21, 2005)