$$b_1 = b_2 = \cdots = b_n = 0, \beta = 0, \rho_2 = 0, \epsilon = 1 \qquad \text{of V and VI,}$$

and

$$a_1 = a_2 = \cdots = a_n = 0, \alpha = 0, \rho = 0, e = 1, \lambda = 1 \qquad \text{of VII,}$$

are due to G. Szegö.

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SOME REMARKS ON POLYNOMIALS

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This note contains some disconnected remarks on polynomials.

Let $f_n(x)=\prod_{i=1}^n(x-x_i)$, $-1\leqq x_1\leqq x_2\leqq \cdots \leqq x_n\leqq 1$. Denote by $-1\leqq y_1\leqq \cdots \leqq y_{n-1}\leqq 1$ the roots of $f_n'(x)$. We prove the following theorem.

THEOREM 1. *For all n*

(1) $$|f_n(-1)| + |f_n(+1)| + \sum_{i=1}^{n-1} |f_n(y_i)| \leqq 2^n.$$

For $n\geqq 3$

(2) $$|f_n(-1)|^{1/2} + |f_n(+1)|^{1/2} + \sum_{i=1}^{n-1} |f_n(y_i)|^{1/2} \leqq 2^{n/2}.$$

For $n\geqq n_0(k)$

(3) $$|f_n(-1)|^{1/k} + |f_n(+1)|^{1/k} + \sum_{i=1}^{n-1} |f_n(y_i)|^{1/k} \leqq 2^{n/k}.$$

REMARK. If $y_i=y_{i+1}$ or $-1=y_1$, $+1=y_{n-1}$ the corresponding summands clearly vanish.

Clearly

$$|f_n(-1)| \leqq (1-x_1)2^{n-1}, \qquad |f_n(y_i)| \leqq |y_i - x_{i+1}|\, 2^{n-1},$$
$$|f_n(+1)| \leqq (1-x_n)2^{n-1}.$$

Thus

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