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An Algorithm for Writing the Coefficients of a Polynomial with Given Zeros

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3. Young and inexperienced instructors as well as those newly come from other colleges find such a control valuable in enabling them to align themselves with the institutional standards.

4. Departments and colleges in the same institution frequently have different standards of grading. This leads to or perpetuates different academic standards, and makes the grades of a student in one group non-comparable with those of a student in another. An adequate control of grades would reduce such inequalities, perhaps to a minimum.

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AN ALGORITHM FOR WRITING THE COEFFICIENTS OF A POLYNOMIAL WITH GIVEN ZEROS

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Given a set of numbers $\{A_1\}=a_1 \ldots, a_n$, we may represent the sum of the products, taken r at a time, of the first k numbers of the set by $S(a_i,r,k)$. Obviously $S(a_i,r,k)=S(a_i,r,k-1)+a_kS(a_i,r-1,k-1)$ for r, $k>1$. If in addition we define $S(a_i,o,k)=1$ for $k>0$ the relation holds for $r,k=0$. Also $S(a_i,r,k)=0$ for $k<r$.

This suggests an arrangement of these sums in an array in which r is the number of the row and k is the number of the column with a_k at the head of the column.

For example let the set $\{a_1\}$ be the numbers 2, 3, 4, 5. Then the arrangement will be as follows:

	$k=1$ 2	$k=2$ 3	$k=3$ 4	$k=4$ 5
$r=0$	1	1	1	1
$r=1$	2	5	9	14
$r=2$		6	26	71
$r=3$			24	124
$r=4$				120

and each kth column contains the coefficients, in order, of an equation whose roots are $-a_1$, $-a_2$, ---------- a_k. When the roots are all equal to -1, the rth row will be the figurate numbers of order $r+1$.

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