To the Editor, *The Mathematical Gazette*

SIR,

I have consulted the articles by Priday and Davies concerning Langford's problem (*Math. Gaz.* Vol. XLIII, Dec 59, pp. 250–255). I notice that 25 is given as the number of solutions for the case $n = 7$ whereas I know of 26 solutions, and wonder whether the 26th has passed unobserved. Attached is a complete list of solutions.

73625324765141	001	57141653472362	014
72632453764151	002	17125623475364	015
72462354736151	003	27423564371516	016
73161345726425	004	62742356437151	017
71416354732652	005	26721514637543	018
71316435724625	006	36713145627425	019
74151643752362	007	51716254237643	020
72452634753161	008	23726351417654	021
57263254376141	009	41716425327635	022
37463254276151	010	52732653417164	023
57416154372632	011	35743625427161	024
57236253471614	012	35723625417164	025
17126425374635	013	24723645317165	026

Yours faithfully,
P. R. LLOYD

Dean Oak,
Leigh,
Reigate,
Surrey.

To the Editor, *The Mathematical Gazette*

DEAR SIR,

Congratulations to my good friend, Mr. Robert Pargeter, for his letter on p. 164 of the *Gazette* for May, 1970.

I wonder whether it is realized how much sympathy he will evoke in a considerable part of the silent majority of teachers of mathematics.

This department, of fifteen lecturers (slightly below strength) is very much on his side, and we are "customers" for a large representation of the schools of Great Britain.

For the last two or three years we have been admitting cadets who have obtained "C" or better on "new type" papers at "A" level. Without exception they have done far less well than their "Traditional" trained brethren in preparing for Cambridge and the Royal Military College of Science. The best are schooled in *ideas* but deficient in *techniques*.

It could well be argued that a young man who is destined to read Mathematics is not ill-served in "modern" treatments; but in the first place it is almost impossible to spoil a good potential mathematician (even by bad teaching); and, secondly, surely we have a duty to those who, like most of our cadets, are primarily preparing to be Engineers or Scientists.

https://doi.org/10.2307/3613329 Published online by Cambridge University Press

Our collective view is that so much of the so-called new mathematics is so good that its isolation is tragic. We look forward to the return of the pendulum, when the new work takes its rightful place, completely merged with the main body of Traditional mathematics.

Yours sincerely,

T. G. C. Ward

Department of Mathematics,
The Royal Military Academy Sandhurst,
Camberley, Surrey.

A SET AMBIGUITY 2

To the Editor, *The Mathematical Gazette*

Sir,

I was interested to read the letter by A. R. Pargeter entitled "A Set Ambiguity" in the October 1970 issue of the *Gazette*; for the point he raises is one which has also occurred to me and, I am sure, to many others.

I see no objection to saying that $\{0, 1\}$ is the solution set of both equations $x^2(x - 1) = 0$ and $x(x - 1)^2 = 0$. This expresses the fact that the polynomials with linear factorisations $x^2(x - 1)$ and $x(x - 1)^2$ have the same set of linear divisors, namely $\{x, x - 1\}$. This is analogous to the fact that the natural numbers 12 and 18, which have prime factorisations $2^2 \times 3$ and 2×3^2 respectively, have the same set $\{2, 3\}$ of prime divisors.

The key idea in solving an equation is to find those replacements for x which convert the equation into a true statement; and in this context to use language like 'the solution of the equation $x^2(x - 1) = 0$ is $x = 0, 0$, or 1' is unnatural. The habit of writing the root 0 twice would appear to be associated with the practice of stating the Fundamental Theorem of Algebra in the following way:—

In the field of complex numbers an equation $P(x) = 0$, where $P(x)$ is a polynomial of degree n, has n roots.

I prefer to state this theorem in the following way:—

In the field of complex numbers a polynomial of degree n can be written as a product of n linear factors.

As I see it, solving an equation in the field of complex numbers is concerned with identifying the distinct linear divisors of a polynomial, without specifying the powers which these divisors have in the linear factorisation of the polynomial.

If a polynomial $P(x)$ has linear divisor $x - \alpha$ occurring to the power k in the linear factorisation of $P(x)$, then the polynomial is said to have a root α of multiplicity k. If $k > 1$, then α is said to be a repeated root of the polynomial. This is standard terminology; but it does not compel us, in case $k > 1$, to write down α k times when we are writing down the solution of the equation $P(x) = 0$.

Yours sincerely,

W. T. Blackburn

Dundee College of Education,
Park Place,
Dundee

https://doi.org/10.2307/3613329 Published online by Cambridge University Press