33. Boole's Normal Form Theorem

The fact that we now tend to use the complement, $\bar{x}$, in boolean algebra rather than the subtraction, $1 - x$, used by Boole, need not deprive us of his delightful sproof of his normal form theorem. Using the fairly common notation $x^i = x$ or $\bar{x}$ respectively according as $i = 1$ or 0, we still have

$$\begin{aligned} f(x) &= \sum_0^\infty f^{(n)}(0)x^n/n! && \text{(Maclaurin)} \\ &= f(0)\bar{x} + x[f'(0) + f''(0)/2! + \ldots] && \text{(idempotence)} \end{aligned}$$

and so

$$\begin{aligned} f(1) &= f(0)\bar{1} + 1[f'(0) + f''(0)/2! + \ldots] \\ &= 0 + [f'(0) + f''(0)/2! + \ldots], \end{aligned}$$

which immediately gives

$$f(x) = f(0)\bar{x} + f(1)x, \qquad \text{as expected.}$$

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CORRESPONDENCE

To the Editor of *The Mathematical Gazette*

DEAR SIR,

Whilst in general agreement with your reviewer's comments on "The Cambridge Elementary Mathematical Tables", (No. 372 p. 231) I must point out that he is in error with regard to the statistical tables when he states that they are "no doubt adequate" at the sixth form level. On the contrary, the Cambridge Local Examinations Syndicate, which had these tables compiled for use in their examinations, has stated in reply to a letter from myself, that each candidate for the new 'A' level Statistics examination will be expected to provide himself with a copy of the "Cambridge Elementary Statistical Tables" by Lindley and Miller. "It was considered that candidates for the subject Statistics would in any case require fuller statistical tables than are contained in the Cambridge Elementary Mathematical Tables."

Hardly an auspicious launching of a new and otherwise pleasing set of tables. Perhaps the second edition will include *all* the tables required in the Syndicate's examinations.

Yours faithfully,

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https://doi.org/10.2307/3613621 Published online by Cambridge University Press