Once again we note that (5) is a *universal* relation valid for any sequence of skew vectors.

EXAMPLE 3.

Expectation of L_n. (Spitzer and Widom [3])[3]. It is easy to see that

$$n!E\{L_n\} = E\{\textstyle\sum_{(\sigma)} L_n(\sigma)\}. \tag{7}$$

By an argument similar to that leading to (5), we find

$$\textstyle\sum_{(\sigma)} L_n(\sigma) = \sum_A 2(m-1)!(n-m)!|\vec{Z}_A|. \tag{8}$$

Thus,

$$\begin{aligned} E\{L_n\} &= \sum_A 2(m-1)!(n-m)!E\{|\vec{Z}_A|\}/n! \\ &= \sum_{m=1}^{n} 2(m-1)!(n-m)!\binom{n}{m} E\{|S_m|\}/n! \\ &= \sum_{m=1}^{n} E\{|S_m|\}/m. \end{aligned}$$

REFERENCES

[1] ERIK SPARRE ANDERSEN, "On the fluctuations of sums of random variables," *Math. Scand.*, Vol. 1 (1953), pp. 263–285.

[2] FRANK SPITZER, "A combinatorial lemma and its application to probability theory," *Trans. Amer. Math. Soc.*, Vol. 82 (1956), pp. 323–339.

[3] F. SPITZER AND H. WIDOM, "The circumference of a convex polygon," *Proc. Amer. Math. Soc.*, Vol. 12 (1961), pp. 506–509.

[3] By a limiting argument which we could also employ in this example Spitzer and Widom remove the condition that $Z_k = X_k + iY_k$ have a density.

A COMBINATORIAL DERIVATION OF THE DISTRIBUTION OF THE TRUNCATED POISSON SUFFICIENT STATISTIC[1]

BY T. CACOULLOS

Columbia University

Let $X_1, \cdots, X_n$ be independently distributed with the Poisson distribution truncated away from zero, i.e.,

$$P(x) = \frac{e^{-\lambda}}{1-e^{-\lambda}} \frac{\lambda^x}{x!}, \qquad x = 1, 2, \cdots\cdots. \tag{1}$$

Tate and Goen showed [2] that $T = \sum_{i=1}^n X_i$ has the distribution

Received January 9, 1961; revised February 17, 1961.

[1] This work was sponsored by an Office of Naval Research contract at Columbia University.