mean square deviation.) The use of this formula in the foregoing method gives the result

$$\int_{-\infty}^{\infty} e^{-x^2/2\sigma^2} x^2 dx = \lim_{n=\infty} \sum_{k=-n}^{k=n} \frac{(2n)!}{(n+k)!(n-k)!} (k\Delta x)^2 \Delta x = \sigma^3 \sqrt{2\pi}.$$

Similar evaluations are obtained for

$$\int_{-\infty}^{\infty} e^{-x^2/2\sigma^2} x^4 dx, \quad \int_{-\infty}^{\infty} e^{-x^2/2\sigma^2} x^6 dx, \text{ etc.}$$

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BÔCHER'S BOUNDARY PROBLEMS FOR DIFFERENTIAL EQUATIONS.

Leçons sur les Méthodes de Sturm dans la Théorie des Équations Différentielles Linéaires et leurs Développements Modernes, professées à la Sorbonne en 1913–1914. Par MAXIME BÔCHER. Recueillies et rédigées par GASTON JULIA. Paris, Gauthier-Villars, 1917. 6 + 118 pp.

IT can be said without fear of contradiction that what may be characterized as the *linear problem* is one of the most central in all mathematics. In algebra this problem concerns itself not only with linear forms and linear equations but also with many phases of the discussion of bilinear and quadratic forms. The results arrived at from an algebraic treatment find immediate application in geometry and mechanics. In the field of analysis the linear differential equation in one or more independent variables has always occupied a position of prime importance and in recent years the study of linear integral equations has not only forged a new and powerful tool but has also exerted a profound influence on the general trend of mathematical thought. The recent development of the theory of linear algebraic equations in an infinite number of unknowns by bridging the gap between the old algebraic field of linear equations and bilinear forms on the one hand and the analytic field of differential equations, integral equations, and bilinear forms in an infinite number of variables on the other, has given a remarkable unity to the various aspects of the general problem. In searching for the theory