QUERIES—REPLIES

50. A DEFINITE INTEGRAL (Q 41, v. 6, p. 125).
In the definite integral

$$I = \int_0^\infty u^{-1} \exp(-zu - u^{-2})du$$

put $z = 2x^3$, $v = xu$ so that

$$I = \int_0^\infty v^{-1} \exp[-x^2(2v + v^{-2})]dv.$$

In this form the integral can be evaluated asymptotically by LAPLACE'S method.[1] $f(v) = 2v + v^{-2}$ has its maximum at $v = 1$, and for large x the integral is approximated by

$$\left[\frac{2\pi}{x^2 f''(1)}\right]^{\frac{1}{2}} \exp[-x^2 f(1)]$$

or

$$(\pi/3)^{\frac{1}{2}} x^{-1} e^{-3x^2}.$$

This approximation may be used to start an asymptotic expansion: successive terms may be computed from the differential equation stated in the query.

A. E.

[1] See D. V. WIDDER, *The Laplace Transform.* Princeton, 1946, p. 277–280.

EDITORIAL NOTE: DR. J. ERNEST WILKINS also obtained the dominant term of the asymptotic expansion of this integral for large values of z.

CORRIGENDA

v. 3, p. 355, l. −12, *for* 10^{23} *read* 10^{83}.
v. 6, p. 20, l. −5, *for* $n < 50$ *read* $n \leq 50$.
v. 6, p. 25, l. 14, *for* 1.2(.5) *read* 1.2(.05).
v. 6, p. 25, l. 14, *for* 2–3D *read* 3–4D.
v. 6, p. 25, l. −20, *for* R52 *read* R53.
v. 6, p. 32, l. −7, *for* JOHNSON *read* JOHNSTON.
v. 6, p. 34, l. 7, *for* 1950 *read* 1949.
v. 6, p. 34, l. 9, *for* 21 *read* 206.
v. 6, p. 55, l. −4, *for* y_i *read* y_1.
v. 6, p. 58, l. 18, *for* 33 *read* 5.
v. 6, p. 58, l. 20, *for* 35 *read* 5.
v. 6, p. 61, l. −8, *for* 116 *read* 118.
v. 6, p. 82, l. 6, *for* TABLIS͡TY *read* TABLIT͡SY.
v. 6, p. 86, l. −17, *for* $\rho = 0.6$ *read* $\rho = 0.0$.
v. 6, p. 101, l. −11, *for* 7956 *read* 7556.