

# A BRIEF TABLE OF INTEGRALS\* (continued)

$$\int u \sin u \, du = \sin u - u \cos u.$$

$$\int u^n \sin u \, du = -u^n \cos u + n \int u^{n-1} \cos u \, du.$$

$$\int u \cos u \, du = \cos u + u \sin u.$$

$$\int u^n \cos u \, du = u^n \sin u - n \int u^{n-1} \sin u \, du.$$

$$\int e^{au} \sin nu \, du = \frac{e^{au}(a \sin nu - n \cos nu)}{a^2 + n^2}.$$

$$\int e^{au} \cos nu \, du = \frac{e^{au}(a \cos nu + n \sin nu)}{a^2 + n^2}.$$

$$\int \sin au \sin bu \, du = -\frac{\sin(a+b)u}{2(a+b)} + \frac{\sin(a-b)u}{2(a-b)},$$

$$a^2 \neq b^2.$$

$$\int \cos au \cos bu \, du = \frac{\sin(a+b)u}{2(a+b)} + \frac{\sin(a-b)u}{2(a-b)},$$

$$a^2 \neq b^2.$$

$$\int \sin au \cos bu \, du = -\frac{\cos(a+b)u}{2(a+b)} - \frac{\cos(a-b)u}{2(a-b)},$$

$$a^2 \neq b^2.$$

$$\int \sinh u \, du = \cosh u. \quad \int \cosh u \, du = \sinh u.$$

$$\Gamma(t) = \int_0^{\infty} e^{-u} u^{t-1} \, du, \quad t > 0; \quad \Gamma\left(\frac{1}{2}\right) = \sqrt{\pi}; \quad \text{and} \quad \Gamma(n+1) = n!, \quad \text{if } n \text{ is a positive integer.}$$