$[(1+y \sec \phi_p)(1+y \sec \phi_{p+1})]$, $y>0$, $-(\pi/2)<\phi_p<+(\pi/2)$, $0\leqq g_p\leqq 1$. Also, (4) converges if $\liminf |c_p|<\infty$ and $\sum[|c_p|-\Re(c_p)]<2$. (Received July 2, 1943.)

217. F. T. Wang: *On Riesz summability of Fourier series.* III.

Denote by $\phi_\alpha(t)$ the fractional integral of order α of an even integrable function $\phi(t)$, periodic, with period 2π. The following two results are proved: (i) If $\phi_\alpha(t)=o(t^\gamma)$, $\gamma>\alpha>0$, then the Fourier series of $\phi(t)$ is summable $(R, e^{n^{1-\alpha/\gamma}}, \gamma+\delta)$, $\delta>0$, at $t=0$. (ii) If $\phi_\alpha(t)=o(t^\alpha(\log t)^{-1})$, $\alpha>0$, then the Fourier series of $\phi(t)$ is summable $(R, n^{(\log n)^{1/\alpha}}, \alpha+1)$ at $t=0$. (Received June 11, 1943.)

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218. Stefan Bergman: *Solutions of linear partial differential equations of fourth order.*

Generalizing the known formula $u=\text{Re}[f_1(z)+\bar{z}f_2(z)]$, $z=x+iy$, $\bar{z}=x-iy$, for the biharmonic functions (that is, functions u for which $\Delta\Delta u=16u_{zz\bar{z}\bar{z}}=0$), the author proves that for every equation $L(u)=U_{zz\bar{z}\bar{z}}+a_1u_{zz}+a_2u_{z\bar{z}}+a_3u_{\bar{z}\bar{z}}+a_4u_z+a_5u_{\bar{z}}+a_6u=0$ where $a_\nu=a_\nu(z,\bar{z})$ are analytic functions of z and $\bar{z}$ there exist two functions of z, $\bar{z}$ and a real variable t, $\text{E}_k(z,\bar{z},t)$, $k=1,2$, such that every solution of $L(u)=0$ which is regular in a star domain $\mathfrak{D}$ can be represented in $\mathfrak{D}$ in the form $u(\bar{z})=\text{Re}\{\int_{-1}^{+1}[\sum_{k=1}^{2}\text{E}_k(z,\bar{z},t)f_k(z(1-t^2)/2)dt/(1-t^2)^{1/2}]\}$. The methods and results of the paper *Linear operators in the theory of partial differential equations* (Trans. Amer. Math. Soc. vol. 53 pp. 130–155) can be applied to the functions u, satisfying $L(u)=0$. (Received July 30, 1943.)

219. G. E. Forsythe: *Note on equivalent potential temperature.*

Let a parcel of moist air be saturated with $w_s=w_s(p, T)$ tons of water vapor per ton of dry air. Let the following quantities be measured in meter-ton-second-absolute degree mechanical units: T=temperature; p=total air pressure; $L=L(T)$=latent heat of evaporation of water; $c_p=c_p(T)$ $[c_v=c_v(T)]$=specific heat of dry air at constant pressure [volume]; $e_s=e_s(T)$=vapor pressure of saturated water vapor; $p_d=p-e_s$; $k=(c_p-c_v)/c_p$; $\theta_d=T(100/p_d)^k$. Let $\lambda=\lambda(p, T)=Lw_s/(c_pT)$. Rossby (Massachusetts Institute of Technology Meteorological Papers, vol. I, no. 3 (1932)) defines the equivalent potential temperature θ_e by the relation $\theta_e=\theta_d\exp\lambda$. He asserts without proof that, as $p\to 0$ in a process for which θ_e is constant, one has $\theta_d\to\theta_e$. The present note uses elementary estimates to prove Rossby's assertion: (i) under the oversimplifying assumption that L and c_p are bounded away from 0, as $T\to 0$; (ii) under weaker but physically artificial assumptions about L and c_p. The note includes a further discussion of the important meteorological quantity λ. (Received July 26, 1943.)

220. S. H. Gould: *The Rayleigh-Ritz method for higher eigenvalues.*

An elementary proof is given of the following theorem, fundamental in applications of the Rayleigh-Ritz method for calculating the eigenvalues of a given variational eigenvalue problem: the n roots, arranged in order of magnitude, of the determinantal equation obtained by using n coordinate functions are upper bounds respectively for the first n eigenvalues of the original problem. (Received July 14, 1943.)