[illegible] 517.5

[illegible]
[illegible]
[illegible]

[illegible]

[illegible]

[illegible]

1. [illegible].

[illegible] $f(z)$ [illegible] $\{z_n\}$, $f(0)=1$ [illegible]

$$M(r,f)=\max_{0\le\theta\le 2\pi}\left|f(re^{i\theta})\right|,\qquad L(r,f)=\min_{0\le\theta\le 2\pi}\left|f(re^{i\theta})\right|,$$

$$n(r)=n(r,0,f)=\sum_{|z_n|\le r}1,\qquad N(r)=\int_0^r\frac{n(t)}{t}\,dt.$$

[illegible] ρ [illegible] f [illegible]

$$\rho=\overline{\lim_{r\to+\infty}}\frac{\ln\ln M(r,f)}{\ln r}.$$

[illegible] ε_ρ [illegible] ρ,

$$c(f)=\overline{\lim_{r\to+\infty}}\frac{n(r)}{\ln M(r,f)}.$$

[illegible]

$$C(\rho)=\inf_{f\in\varepsilon_\rho}c(f).$$

[illegible] [1] [illegible] [2,3] [illegible]

$$C(\rho)=\frac{1}{\pi}\sin\pi\rho,\qquad 0\le\rho\le 1; \tag{1}$$

$$\frac{|\sin\pi\theta|}{A_0(1+\ln r)|\sin\pi\rho|+\pi}\le C(\rho)\le\frac{1}{\pi}|\sin\pi\rho|,\qquad \rho>1, \tag{2}$$

[illegible] A_0 [illegible]

[illegible] (2) [illegible]

$$f_\rho(z)=\prod_{n=1}^{+\infty}\left(1+\frac{z}{n^\sigma}\right)\exp\left(\sum_{k=1}^{q}\frac{1}{k}\left(\frac{z}{-n^\sigma}\right)^k\right),$$

[illegible] $\sigma=\rho^{-1}$, $q=[\rho]$, $\rho\notin\mathrm{N}$, [illegible] $n(r)\sim r^{\rho}$ i $\ln M(r,f)\sim\dfrac{\pi}{|\sin\pi\rho|}r^{\rho}$ [illegible] $r\to+\infty$. [illegible] [4] [illegible] f [illegible] $\rho>1$, [illegible]

$$C(\rho)<\frac{|\sin\pi\rho|}{\pi}.$$

[illegible] $C(\rho)$ [illegible] $\rho>1$ [illegible] $C(\rho)$ [illegible] $\rho\to+\infty$.

[illegible] [5] [illegible] φ [illegible] $1<\rho<+\infty$ [illegible]

$$c(f)\ge A|\sin\pi\rho| \tag{3}$$

[illegible] f [illegible] ρ, [illegible] $\{z_n\}$ [illegible] $\arg z=\pi$. [illegible] φ [illegible] [5] [illegible] φ. [illegible] (z) [illegible]

$$\ln \Pi(z)=(-1)^q z^{q+1}\int_0^{+\infty}\frac{n(t,0,\Pi)}{t^{q+1}(t+z)}dt,$$

[illegible] $q=[\rho]$, $|\arg z|<\pi$.

[illegible]

$$B(r,\Pi)=\sup_{|\theta|<\pi}\left|\ln\Pi(re^{i\theta})\right|,$$

$$\Lambda(r)=\frac{B(r,\Pi)}{r^{q+1}},\qquad \varphi(r)=\frac{n(r,0,\Pi)}{r^{q+1}}.$$

[illegible] $\varphi(r)$ [illegible] $r\le 0$ [illegible]:

$$\Lambda(r)\le 12M\varphi(r)+\pi H^*\varphi(r)+10\int_0^{+\infty}\frac{\varphi(t)}{t+r}dt, \tag{4}$$

[illegible]

$$M\varphi(r)=\sup_{\varepsilon>0}\frac{1}{2\varepsilon}\int_{|t-r|<\varepsilon}\varphi(t)dt$$

[illegible]

$$H^*\varphi(r)=\frac{1}{\pi}\sup_{\varepsilon>0}\left|\int_{|t-r|>\varepsilon}\frac{\varphi(t)dt}{t-r}\right|$$

[illegible]

[illegible] (4) [illegible] [5] [illegible]:

$$\left(\int_{R_n}^{+\infty}\left(\frac{B(r,f)}{r^{q+1}}\right)^p dr\right)^{1/p} \le \frac{1}{A\sin\dfrac{\pi}{p}}\left(\int_{R_n}^{+\infty}\left(\frac{n(r,0,f)}{r^{q+1}}\right)^p dr\right)^{1/p}, \tag{5}$$

[illegible] $p=\dfrac{1}{q+1-\rho}+\varepsilon_n$, [illegible] $R_n\to+\infty$, $\varepsilon_n\to 0$ [illegible] $n\to+\infty$ [illegible] (3) [illegible] (5).

[illegible] [6] [illegible] (4), [illegible] 4 [illegible]

$$\mathbf{\Lambda}(r)\le \pi M\varphi(r)+\pi M(H\varphi)r+\int_0^{+\infty}\frac{\varphi(t)}{t+r}dt, \tag{6}$$

[illegible]

$$H\varphi(r)=\frac{1}{\pi}\lim_{\varepsilon\to 0}\int_{|t-r|>\varepsilon}\frac{\varphi(t)}{r-t}dt$$

[illegible]

[illegible] (6) [illegible]

$$\mathbf{\Lambda}(r)\le \pi\varphi^{\perp}(r)+\pi\tilde{\varphi}^{\perp}(r)+\int_0^{+\infty}\frac{\varphi(t)}{t+r}dt, \tag{7}$$

[illegible]

$$\varphi^{\perp}(r)=\sup_{y>0}\left|\frac{1}{\pi}\int_{-\infty}^{+\infty}\frac{y\varphi(t)dt}{(r-t)^2+y^2}\right|$$

[illegible]

$$\tilde{\varphi}^{\perp}(r)=\sup_{y>0}\left|\frac{1}{\pi}\int_{-\infty}^{+\infty}\frac{(r-t)\varphi(t)dt}{(r-t)^2+y^2}\right|$$

[illegible].

[illegible] L_p [illegible] $\|M\varphi\|_p$ [illegible] $\|M(H\varphi)\|_p$ [illegible] $M\varphi$ [illegible] $M(H\varphi)$ [illegible] L_p [illegible] $\|\varphi_\alpha^*\|_p$ [illegible] $\|\tilde{\varphi}_\alpha^*\|_p$ [illegible]

$$\varphi_\alpha^*(r)=\sup_{\Lambda_\alpha(r)}\left|\frac{1}{\pi}\int_{-\infty}^{+\infty}\frac{y\varphi(t)dt}{(x-t)^2+y^2}\right|$$

[illegible]

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$$\widetilde{\varphi}^{*}_{\alpha}(r)=\sup_{\Delta_\alpha(r)}\left|\frac{1}{\pi}\int_{-\infty}^{+\infty}\frac{(x-t)\varphi(t)dt}{(x-t)^2+y^2}\right|$$

$$\Delta_\alpha(r)=\left\{x+iy:\left|x-r\right|<\alpha y,\ \alpha>0,\ y>0\right\},$$

(. [7, 239])

$$\left\|\widetilde{\varphi}^{*}_{\alpha}\right\|_p\le C_p\left\|\varphi^{*}_{\alpha}\right\|_p,\quad p>1,$$

$C_p=tg\dfrac{\pi}{2p}$ $1<p\le 2$ $C_p=ctg\dfrac{\pi}{2p}$ ≥ 2.

Φ (3). (3) $A=\dfrac{1}{4\pi}$,

$$\frac{\left|\sin\pi\rho\right|}{4\pi}\le c(f)\le\frac{\left|\sin\pi\rho\right|}{\pi}$$

$f\in\varepsilon_\rho$.

[5], f $\rho>1$ k.

2.

1. f $\rho>1$ $f(0)=1$, $B(r,f)=\sup\limits_{|\theta|<\pi}\left|\ln f(re)^{i\theta}\right|$.

$$\varlimsup_{r\to+\infty}\frac{n(r)}{B(r,f)}\ge\frac{\left|\sin\pi\rho\right|}{4\pi}.$$

1. f $\rho>1$ $f(0)=1$.

$$\varlimsup_{r\to+\infty}\frac{N(r)}{B(r,f)}\ge\frac{\sin\pi\rho}{4\pi\rho}.$$

2. f $\rho>1$, $f(0)=1$. f k,

$$\varlimsup_{r\to+\infty}\frac{n(r)}{\ln M(r,f)}\ge\frac{\left|\sin\pi\rho\right|}{4\pi k},\qquad \varlimsup_{r\to+\infty}\frac{\ln L(r,f)}{n(r)}\ge-\frac{4\pi k}{\left|\sin\pi\rho\right|},$$

$$\varlimsup_{r\to+\infty}\frac{N(r)}{\ln M(r,f)}\ge\frac{\left|\sin\pi\rho\right|}{4\pi\rho k},\qquad \varlimsup_{r\to+\infty}\frac{\ln L(r,f)}{N(r)}\ge-\frac{4\pi\rho k}{\left|\sin\pi\rho\right|}.$$

[illegible]

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