$(, d)(, \rho)$

$f :\to x_0 \in \varepsilon > 0 \delta > 0 d(x, x_0) < \delta \rho(f(x), f(x_0)) < \varepsilon$

$f :\to$

$f x_0 \in$

$O \subset f(x_0) f^{-1}(O)$

$\{x_n\} x_n \to x f(x_n) \to f(x_0)$

$f :\to f x \in$

$f :\to$

f

$O \subset f^{-1}(O)$

$C \subset f^{-1}(C)$

$f f () = R^k f()$

f

$$M = \sup_{x \in} f(x), m = \inf_{x \in} f(x).$$

$p, q \in f(p) = M f(q) = m$

$f \to f \varepsilon > 0 \delta > 0$

$$\rho(f(x_1), f(x_2)) < \varepsilon if d(x_1, x_2) < \delta, and x_1, x_2 \in .$$

$f f$

$(, \rho)$

$\{f_n\} n = 1, 2, \cdots, E \subset \{f_n\} E \subset f \varepsilon > 0 N n \geq N$

$$|f_n(x) - f(x)| < \varepsilon for any x \in E.$$

$\{f_n\} E \subset \{f_n\} E f f E$

$(M, \rho) C(M) M \to R$

$$d(u, v) = \max_{x \in M} |u(x) - v(x)| u, v \in C(M).$$

$(C(M), d)(C(M), d)$

$\{f_n\} C(M)$

$\{f_n\} M > 0 |f_n(x)| \leq M x \in M n$

$\{f_n\} \varepsilon > 0 \delta(\varepsilon) > 0 |f_n(x_1) - f_n(x_2)| < \varepsilon n x_1, x_2 \in M \rho(x_1, x_2) < \delta$

$\{f_n\} C(M) \{f_n\} d \{f_n\}$