Def: For any $\boxed{\varepsilon>0}$, there exists a $\delta \boxed{>0}$. such that } 10

-5

$0<|x-c|<\delta \Rightarrow |f(x)-L|<\varepsilon$

-2

〈方法一〉 Given $\varepsilon>0$, $|(x-1)^2-4|<\varepsilon$

$$\Leftrightarrow 4-\varepsilon < (x-1)^2 < 4+\varepsilon$$

(if $\varepsilon<4$) -2

$$\Leftrightarrow \sqrt{4-\varepsilon} < x-1 < \sqrt{4+\varepsilon}$$

$$\Leftrightarrow -2+\sqrt{4-\varepsilon} < x-3 < -2+\sqrt{4+\varepsilon}$$

10

We hope $\begin{cases} -\delta \geq -2+\sqrt{4-\varepsilon} \\ \delta \leq -2+\sqrt{4+\varepsilon} \end{cases}$

So, if $0<\varepsilon<4$,

-5

then take $\delta = \min\{2-\sqrt{4-\varepsilon}, -2+\sqrt{4+\varepsilon}\}$ 10

Thus, $0<|x-3|<\delta \Rightarrow |(x-1)^2-4|<\varepsilon$

〈方法二〉 Given $\varepsilon>0$, there exists a $\delta=\min\{1, \frac{\varepsilon}{5}\}$ 10

If $0<|x-3|<\delta$ then since $|x-3|<\delta\leq 1$

$\Rightarrow |x+1| \leq |x-3|+4 < 5$

Thus, $|(x-1)^2-4| = |x+1||x-3| < 5|x-3| < 5\delta \leq \varepsilon$ 10

$+5$