

Limit and Continuity

f is Continuous at x=a then |f| is continuous at x=a

Given

To prove

Proof

f is continuous at x=a.

∴ By def.

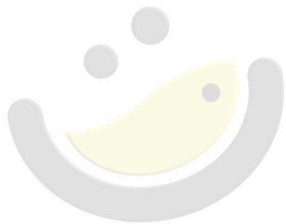
$$|f(x) - f(a)| < \epsilon \text{ for } |x - a| < \delta \quad \text{--- (1)}$$

$$\begin{aligned}
 ||f|(x) - |f|(a)| &= ||f(x)| - |f(a)|| \\
 &\leq |f(x) - f(a)| < \epsilon \text{ for } |x - a| < \delta
 \end{aligned}$$

$\left| \begin{array}{l} |a| - |b| \\ \leq |a - b| \end{array} \right.$

\therefore By def. of continuity of limit
 $|f|$ is continuous at $x = a$.

Hence Proved



OMG {MATHS}
The poetry of logical ideas.