A=$\cos(x)\cos(2x)\cdots\cos(2^n x)$.

1.$sinx \neq 0, sinx$,

$\sin(x)A$

$= \sin(x)\cos(x)\cos(2x)\cdots\cos(2^n x)$

$= \frac{1}{2}\sin(2x)\cos(2x)\cdots\cos(2^n x)$

$= \frac{1}{2^2}\sin(4x)\cdots\cos(2^n x)$

$= \frac{1}{2^{n+1}}\sin\left(2^{n+1}x\right)$

$A = \frac{\sin\left(2^{n+1}x\right)}{2^{n+1}\sin x}$.

$n \to \infty, \sin(2^{n+1}x),\ -1 \leq \sin(2^{n+1}x) \leq 1$.

$\bigtriangledown \lim_{n\to\infty} \frac{1}{2^{n+1}} = 0,\ \sin x \neq 0$,

$\lim_{n\to\infty} A = 0$.

$x = 2k\pi$,