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\begin{aligned} & 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(2^{n+1} x) \\ & A = \frac{\sin(2^{n+1} x)}{2^{n+1} \sin x}. \\ & n \to \infty, \sin(2^{n+1} x), \quad -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, \end{aligned}
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