

When is the limit equal to the supremum norm of f ?

OVIDIU FURDUI and HUIZENG QIN

ABSTRACT.

If f is a nonnegative continuous function on $[0, 1]$ we investigate the problem when is $\lim_{n \rightarrow \infty} \sqrt[n]{\int_0^1 f(x)f(x^2) \cdots f(x^n) dx}$ equal to the supremum norm of f . This problem is motivated by a problem in classical analysis which states that if f is a continuous function on $[a, b]$ then the following equality holds $\lim_{n \rightarrow \infty} \sqrt[n]{\int_a^b |f(x)|^n dx} = \|f\|_\infty$.

CAMPIA TURZII, 405100 CLUJ-NAPOCA, ROMANIA
E-mail address: ofurdui@yahoo.com

SHANDONG UNIVERSITY OF TECHNOLOGY
INSTITUTE OF APPLIED MATHEMATICS
ZIBO, 255049 SHANDONG, P. R. CHINA
E-mail address: qinhz_000@163.com