

## Problem of the Week-4: Limit of a Product

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Find the exact value of

$$\lim_{n \rightarrow \infty} \frac{1}{n^4} \prod_{j=1}^{2n} (n^2 + j^2)^{\frac{1}{n}}$$

Fully justify your answer.

Hint: It is possible to convert this product to a sum and realize it as a Riemann sum

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Posting Date 10/14/12. Submit solutions to Noah Aydin, Mathematics Department, RBH 319 (e-mail or hard-copy, but hard copy submissions must include a time stamp) by 4 pm on 10/26/12.