

**Weekly Problem Competition**

**Friday, October 9, 2009**

Find the limit

$$\lim_{n \rightarrow \infty} \left[ \left(1 + \frac{1}{n^2}\right) \left(1 + \frac{4}{n^2}\right) \left(1 + \frac{9}{n^2}\right) \cdots \left(1 + \frac{n^2}{n^2}\right) \right]^{\frac{1}{n}}.$$

**Remarks:**

The rules and results of the competition can be found at <http://www.math.iit.edu/~weeklyproblem>

You have to submit the solution by email, to [weeklyproblem@math.iit.edu](mailto:weeklyproblem@math.iit.edu)

Please feel free to tell any IIT undergraduate student about the competition.

**Thank you for your participation  
Good Luck !**