

Proposed solution to problem 153, Mathproblems, vol.6 issue 2

Let $\alpha > 1$ and let $a, b \in \mathbb{R}$ $b \neq 0$. Calculate

$$\lim_{n \rightarrow \infty} \begin{pmatrix} 1 - \frac{\alpha}{n^\alpha} & \frac{-b}{n} \\ \frac{b}{n} & 1 + \frac{\alpha}{n^\alpha} \end{pmatrix}^n$$