

Euler-szám, rendőrelv

1.

$$\lim_{n \rightarrow \infty} \left(1 + \frac{\alpha}{n}\right)^n = e^\alpha$$

$$\lim_{n \rightarrow \infty} \left(\frac{n+4}{n+6}\right)^{n+2} = ? \quad \text{hf.:} \quad \lim_{n \rightarrow \infty} \left(\frac{n-3}{n-7}\right)^{n+4} = ?$$

2.

$$\exists \lim(a_n) = \lim(c_n) = A \quad \& \quad (\exists N \in \mathbf{N} \forall n > N a_n \leq b_n \leq c_n) \quad \Rightarrow \quad \exists \lim(b_n) = A$$

$$\text{a)} \quad \lim_{n \rightarrow \infty} \sqrt[n]{n^4 + 5n^3 + 2} = ?, \quad \text{b)} \quad \lim_{n \rightarrow \infty} \sqrt[n]{3^n - 2n^4 + 1} = ?$$

$$\text{gy.:} \quad \lim_{n \rightarrow \infty} \sqrt[n]{\frac{4^n - 3n^2}{n^2 + n + 1}} = ?, \quad \text{hf.:} \quad \lim_{n \rightarrow \infty} \sqrt[n]{\frac{6^n + 2n^7 - n^5}{2^n - n + 4}} = ?$$

3.

$$\text{a)} \quad \lim_{n \rightarrow \infty} \left(1 + \frac{1}{n}\right)^{n^2} = ?, \quad \text{b)} \quad \lim_{n \rightarrow \infty} \left(1 + \frac{1}{n^2}\right)^n = ?$$

4.

$$\lim_{x \rightarrow 0} \frac{e^x - 1}{x} = 1$$

$$g \text{ kölcsönösen egyértelmű} \quad \Rightarrow \quad f(y) \xrightarrow[y \rightarrow \lim_{x \rightarrow u} g(x)]{} \lim_{x \rightarrow u} f(g(x))$$

$$\text{a)} \quad \lim_{x \rightarrow 0} \frac{e^{x^2} - 1}{x^2} \quad \text{b)} \quad \lim_{x \rightarrow 0} \frac{e^{x^2} - 1}{e^x - 1} \quad \text{gy)} \quad \lim_{x \rightarrow 0} \frac{e^x - 1}{e^{x^3} - 1}$$