## 2024 Vill. Mat A1 – 8. gyakorlat

Euler-szám, rendőrelv

1.

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

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

**2**.

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

a) 
$$\lim_{n \to \infty} \sqrt[n]{n^4 + 5n^3 + 2} = ?$$

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

**gy.:** 
$$\lim_{n\to\infty} \sqrt[n]{\frac{4^n - 3n^2}{n^2 + n + 1}} = ?$$

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

3.

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

4.

$$\lim_{x\to 0}\frac{e^x-1}{x}=1$$
  $g$  kölcsönösen egyértelmű  $\Rightarrow f(y) \xrightarrow[y\to \lim_{x\to u}g(x)]{} \lim_{x\to u}f(g(x))$ 

a) 
$$\lim_{x\to 0} \frac{e^{x^2}-1}{r^2}$$

**b**) 
$$\lim_{x\to 0} \frac{e^{x^2}-1}{e^x-1}$$

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