K 2018-07-24

Aufg. 2

a) g.P.i.N.: $$\lim_{n\to\infty} \frac{n^2\left(4-\frac{6}{n}+\frac{7}{n^2}\right)}{n^2\left(1\cdot\left(2+\frac{1}{n}\right)\right)} = \frac{4}{2} = \underline{2}$$

b) $$\lim_{x\to\infty}\left(\frac{-2x^2-4x+7}{e^x+x}\right) \overset{\uparrow}{=} \lim_{x\to\infty} \frac{-4x-4+7}{e^x+1} \overset{\uparrow}{=}$$

$\frac{-\infty}{\infty}$, L'Hosp $\frac{-\infty}{\infty}$, L'Hosp

$$\lim_{x\to\infty} \frac{-4}{e^x} = -4\lim_{x\to\infty} e^{-x} = \underline{0}$$

c) g.P.i.N.: $$\lim_{n\to\infty} \frac{n\left(\sqrt{\frac{n^2}{n^2}+\frac{2n}{n^2}+\frac{2}{n^2}}+4-\frac{5}{n}\right)}{n\left(1+\frac{5}{n}\right)}$$

$$= \lim_{n\to\infty} \frac{\sqrt{1+\frac{2}{n}+\frac{2}{n^2}}+4-\frac{5}{n}}{1+\frac{5}{n}} = \frac{1+4}{1}$$

$$= \underline{5}$$