Gomilište i limes niza realnih brojeva

Matematika 2

Damir Horvat

FOI, Varaždin

Sadržaj

prvi zadatak

drugi zadatak

treći zadatak

četvrti zadatak

peti zadatak

šesti zadatak

sedmi zadatak

prvi zadatak

Zadatak 1

Odredite gomilišta sljedećih nizova:

a)
$$a_n = (-1)^n \cdot 2 + \frac{1}{n}$$

$$\mathrm{b)} \;\; b_n = 1 + \sin \frac{n\pi}{2}$$

c)
$$c_n = \begin{cases} \frac{1}{n}, & \text{ako je n paran} \\ \sqrt{n}, & \text{ako je n neparan} \end{cases}$$

d)
$$d_n = \begin{cases} p + \frac{1}{p^k}, & \text{ako je } n = p^k \text{ za neki prosti broj } p \text{ i neki } k \in \mathbb{N} \\ n, & \text{inače} \end{cases}$$

Jesu li zadani nizovi konvergentni?

$$a_n = (-1)^n \cdot 2 + \frac{1}{n}$$

$$a_n = (-1)^n \cdot 2 + \frac{1}{n}$$

a)
$$a_n = \begin{cases} 2 + \frac{1}{n}, & \text{ako je } n \text{ paran} \end{cases}$$

$$a_n = (-1)^n \cdot 2 + \frac{1}{n}$$

a)
$$a_n = \begin{cases} 2 + \frac{1}{n}, & \text{ako je } n \text{ paran} \\ -2 + \frac{1}{n}, & \text{ako je } n \text{ neparan} \end{cases}$$

$$a_n=(-1)^n\cdot 2+\frac{1}{n}$$

a)
$$a_n = \begin{cases} 2 + \frac{1}{n}, & \text{ako je } n \text{ paran} \\ -2 + \frac{1}{n}, & \text{ako je } n \text{ neparan} \end{cases}$$

$$\lim_{n\to\infty}\left(2+\frac{1}{n}\right)=2$$

$$a_n=(-1)^n\cdot 2+\frac{1}{n}$$

 $a_n=(-1)^n\cdot 2+\frac{1}{n}$

a)
$$a_n = \begin{cases} 2 + \frac{1}{n}, & \text{ako je } n \text{ paran} \\ -2 + \frac{1}{n}, & \text{ako je } n \text{ neparan} \end{cases}$$

$$\lim_{n\to\infty}\left(2+\frac{1}{n}\right)=2$$

 Broj 2 je gomilište niza (a_n) jer svaka okolina tog broja sadrži beskonačno mnogo članova tog niza koji se nalaze na parnim pozicijama,

 $a_n=(-1)^n\cdot 2+\frac{1}{n}$

a)
$$a_n = \begin{cases} 2 + \frac{1}{n}, & \text{ako je } n \text{ paran} \\ -2 + \frac{1}{n}, & \text{ako je } n \text{ neparan} \end{cases}$$

$$\lim_{n\to\infty}\left(2+\frac{1}{n}\right)=2$$

• Broj 2 je gomilište niza (a_n) jer svaka okolina tog broja sadrži beskonačno mnogo članova tog niza koji se nalaze na parnim pozicijama, tj. podniz $(a_{2k})_{k\in\mathbb{N}}$ konvergira broju 2.

a) $a_n = \begin{cases} 2 + \frac{1}{n}, & \text{ako je } n \text{ paran} \\ -2 + \frac{1}{n}, & \text{ako je } n \text{ neparan} \end{cases}$

Podniz konvergentnog niza je konvergentni niz s istim limesom. Za n=2k vrijedi

$$\lim_{k\to\infty}\left(2+\frac{1}{2k}\right)=2.$$

$$\lim_{n\to\infty} \left(2+\frac{1}{n}\right) \stackrel{\text{res}}{=} 2$$

• Broj 2 je gomilište niza (a_n) jer svaka okolina tog broja sadrži beskonačno mnogo članova tog niza koji se nalaze na parnim pozicijama, tj. podniz $(a_{2k})_{k\in\mathbb{N}}$ konvergira broju 2.

 $a_n=(-1)^n\cdot 2+\frac{1}{n}$

a)
$$a_n = \begin{cases} 2 + \frac{1}{n}, & \text{ako je } n \text{ paran} \\ -2 + \frac{1}{n}, & \text{ako je } n \text{ neparan} \end{cases}$$

$$\lim_{n\to\infty} \left(2+\frac{1}{n}\right) = 2, \qquad \lim_{n\to\infty} \left(-2+\frac{1}{n}\right) = -2$$

• Broj 2 je gomilište niza (a_n) jer svaka okolina tog broja sadrži beskonačno mnogo članova tog niza koji se nalaze na parnim pozicijama, tj. podniz $(a_{2k})_{k\in\mathbb{N}}$ konvergira broju 2.

$$a_n = (-1)^n \cdot 2 + \frac{1}{n}$$

a)
$$a_n = \begin{cases} 2 + \frac{1}{n}, & \text{ako je } n \text{ paran} \\ -2 + \frac{1}{n}, & \text{ako je } n \text{ neparan} \end{cases}$$

$$\lim_{n\to\infty} \left(2+\frac{1}{n}\right) = 2, \qquad \lim_{n\to\infty} \left(-2+\frac{1}{n}\right) = -2$$

- Broj 2 je gomilište niza (a_n) jer svaka okolina tog broja sadrži beskonačno mnogo članova tog niza koji se nalaze na parnim pozicijama, tj. podniz $(a_{2k})_{k\in\mathbb{N}}$ konvergira broju 2.
- Broj -2 je gomilište niza (a_n) jer svaka okolina tog broja sadrži beskonačno mnogo članova tog niza koji se nalaze na neparnim pozicijama,

$$a_n=(-1)^n\cdot 2+\frac{1}{n}$$

a)
$$a_n = \begin{cases} 2 + \frac{1}{n}, & \text{ako je } n \text{ paran} \\ -2 + \frac{1}{n}, & \text{ako je } n \text{ neparan} \end{cases}$$

$$\lim_{n\to\infty} \left(2+\frac{1}{n}\right) = 2, \qquad \lim_{n\to\infty} \left(-2+\frac{1}{n}\right) = -2$$

- Broj 2 je gomilište niza (a_n) jer svaka okolina tog broja sadrži beskonačno mnogo članova tog niza koji se nalaze na parnim pozicijama, tj. podniz $(a_{2k})_{k\in\mathbb{N}}$ konvergira broju 2.
- Broj -2 je gomilište niza (a_n) jer svaka okolina tog broja sadrži beskonačno mnogo članova tog niza koji se nalaze na neparnim pozicijama, tj. podniz $(a_{2k-1})_{k\in\mathbb{N}}$ konvergira broju -2.

a)
$$a_n = \begin{cases} 2 + \frac{1}{n}, & \text{ako je } n \text{ paran} \\ -2 + \frac{1}{n}, & \text{ako je } n \text{ neparan} \end{cases}$$

Podniz konvergentnog niza je konvergentni niz s istim limesom. Za n = 2k - 1 vrijedi

$$\lim_{k\to\infty}\left(-2+\frac{1}{2k-1}\right)=-2.$$

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

$$\lim_{n\to\infty} \left(2+\frac{1}{n}\right) = 2, \qquad \lim_{n\to\infty} \left(-2+\frac{1}{n}\right) \stackrel{\begin{subarray}{l}}{=} -2$$

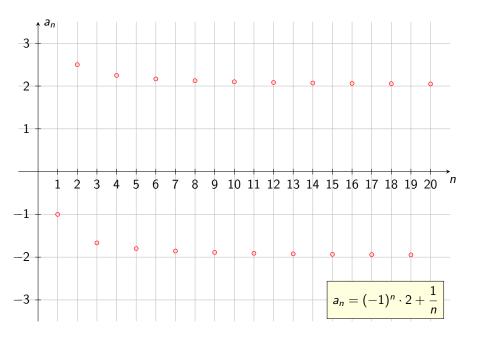
- Broj 2 je gomilište niza (a_n) jer svaka okolina tog broja sadrži beskonačno mnogo članova tog niza koji se nalaze na parnim pozicijama, tj. podniz $(a_{2k})_{k\in\mathbb{N}}$ konvergira broju 2.
- Broj -2 je gomilište niza (a_n) jer svaka okolina tog broja sadrži beskonačno mnogo članova tog niza koji se nalaze na neparnim pozicijama, tj. podniz $(a_{2k-1})_{k\in\mathbb{N}}$ konvergira broju -2.

a)
$$a_n = \begin{cases} 2 + \frac{1}{n}, & \text{ako je } n \text{ paran} \\ -2 + \frac{1}{n}, & \text{ako je } n \text{ neparan} \end{cases}$$

$$a_n = (-1)^n \cdot 2 + \frac{1}{n}$$

$$\lim_{n\to\infty} \left(2+\frac{1}{n}\right) = 2, \qquad \lim_{n\to\infty} \left(-2+\frac{1}{n}\right) = -2$$

- Broj 2 je gomilište niza (a_n) jer svaka okolina tog broja sadrži beskonačno mnogo članova tog niza koji se nalaze na parnim pozicijama, tj. podniz $(a_{2k})_{k\in\mathbb{N}}$ konvergira broju 2.
- Broj -2 je gomilište niza (a_n) jer svaka okolina tog broja sadrži beskonačno mnogo članova tog niza koji se nalaze na neparnim pozicijama, tj. podniz $(a_{2k-1})_{k\in\mathbb{N}}$ konvergira broju -2.
- Niz (a_n) nije konvergentan jer ima više od jednog gomilišta.



 $b_n = 1 + \sin \frac{n\pi}{2}$

$$\sin\frac{n\pi}{2} = \left\{ \begin{array}{c} \\ \end{array} \right.$$

$$\sin rac{n\pi}{2} = \left\{egin{array}{ll} 0, & ext{ako je } n=2k ext{ za neki } k \in \mathbb{N} \end{array}
ight.$$

$$\sin \frac{n\pi}{2} = \left\{ egin{array}{ll} 0, & ext{ako je } n = 2k ext{ za neki } k \in \mathbb{N} \ 1, & ext{ako je } n = 4k - 3 ext{ za neki } k \in \mathbb{N} \end{array}
ight.$$

$$\sin\frac{n\pi}{2} = \begin{cases} 0, & \text{ako je } n = 2k \text{ za neki } k \in \mathbb{N} \\ 1, & \text{ako je } n = 4k - 3 \text{ za neki } k \in \mathbb{N} \\ -1, & \text{ako je } n = 4k - 1 \text{ za neki } k \in \mathbb{N} \end{cases}$$

$$\sin rac{n\pi}{2} = \left\{ egin{array}{ll} 0, & ext{ako je } n=2k ext{ za neki } k \in \mathbb{N} \ 1, & ext{ako je } n=4k-3 ext{ za neki } k \in \mathbb{N} \ -1, & ext{ako je } n=4k-1 ext{ za neki } k \in \mathbb{N} \end{array}
ight.$$

$$b_n =$$

$$\sin \frac{n\pi}{2} = \left\{ egin{array}{ll} 0, & ext{ako je } n=2k ext{ za neki } k \in \mathbb{N} \ 1, & ext{ako je } n=4k-3 ext{ za neki } k \in \mathbb{N} \ -1, & ext{ako je } n=4k-1 ext{ za neki } k \in \mathbb{N} \end{array}
ight.$$

$$b_n = egin{cases} 1, & ext{ako je } n = 2k ext{ za neki } k \in \mathbb{N} \end{cases}$$

$$\sin \frac{n\pi}{2} = \left\{ egin{array}{ll} 0, & ext{ako je } n=2k ext{ za neki } k \in \mathbb{N} \ 1, & ext{ako je } n=4k-3 ext{ za neki } k \in \mathbb{N} \ -1, & ext{ako je } n=4k-1 ext{ za neki } k \in \mathbb{N} \end{array}
ight.$$

$$b_n = egin{cases} 1, & ext{ako je } n = 2k ext{ za neki } k \in \mathbb{N} \ 2, & ext{ako je } n = 4k - 3 ext{ za neki } k \in \mathbb{N} \end{cases}$$

$$\sin \frac{n\pi}{2} = \begin{cases} 0, & \text{ako je } n = 2k \text{ za neki } k \in \mathbb{N} \\ 1, & \text{ako je } n = 4k - 3 \text{ za neki } k \in \mathbb{N} \\ -1, & \text{ako je } n = 4k - 1 \text{ za neki } k \in \mathbb{N} \end{cases}$$

$$b_n = egin{cases} 1, & ext{ako je } n = 2k ext{ za neki } k \in \mathbb{N} \ 2, & ext{ako je } n = 4k - 3 ext{ za neki } k \in \mathbb{N} \ 0, & ext{ako je } n = 4k - 1 ext{ za neki } k \in \mathbb{N} \end{cases}$$

$$\sin\frac{n\pi}{2} = \begin{cases} 0, & \text{ako je } n = 2k \text{ za neki } k \in \mathbb{N} \\ 1, & \text{ako je } n = 4k - 3 \text{ za neki } k \in \mathbb{N} \\ -1, & \text{ako je } n = 4k - 1 \text{ za neki } k \in \mathbb{N} \end{cases}$$

$$b_n = \begin{cases} 1, & \text{ako je } n = 2k \text{ za neki } k \in \mathbb{N} \\ 2, & \text{ako je } n = 4k - 3 \text{ za neki } k \in \mathbb{N} \\ 0, & \text{ako je } n = 4k - 1 \text{ za neki } k \in \mathbb{N} \end{cases}$$

$$(b_n)$$
 \longrightarrow 2, 1, 0, 1, 2, 1, 0, 1, 2, 1, 0, 1,...

 $2,\ 1,\ 0,\ 1,\ 2,\ 1,\ 0,\ 1,\ 2,\ 1,\ 0,\ 1,\dots$

 $b_n = 1 + \sin \frac{n\pi}{2}$

$$b_n = 1 + \sin \frac{n\pi}{2}$$

 $\underline{\underline{2}}$, 1, 0, 1, $\underline{\underline{2}}$, 1, 0, 1, $\underline{\underline{2}}$, 1, 0, 1,...

• Broj 2 je gomilište niza (b_n) jer svaka okolina tog broja sadrži beskonačno mnogo članova tog niza koji se nalaze na pozicijama s indeksima oblika 4k-3 za $k\in\mathbb{N}$,

$$b_n=1+\sin\frac{n\pi}{2}$$

 $\underline{\underline{2}}$, 1, 0, 1, $\underline{\underline{2}}$, 1, 0, 1, $\underline{\underline{2}}$, 1, 0, 1,...

• Broj 2 je gomilište niza (b_n) jer svaka okolina tog broja sadrži beskonačno mnogo članova tog niza koji se nalaze na pozicijama s indeksima oblika 4k-3 za $k\in\mathbb{N}$, tj. podniz $(b_{4k-3})_{k\in\mathbb{N}}$ konvergira broju 2.

$$b_n=1+\sin\frac{n\pi}{2}$$

- $2,\ \underline{\underline{1}},\ 0,\ \underline{\underline{1}},\ 2,\ \underline{\underline{1}},\ 0,\ \underline{\underline{1}},\ 2,\ \underline{\underline{1}},\ 0,\ \underline{\underline{1}},\ldots$
- Broj 2 je gomilište niza (b_n) jer svaka okolina tog broja sadrži beskonačno mnogo članova tog niza koji se nalaze na pozicijama s indeksima oblika 4k-3 za $k\in\mathbb{N}$, tj. podniz $(b_{4k-3})_{k\in\mathbb{N}}$ konvergira broju 2.
- Broj 1 je gomilište niza (b_n) jer svaka okolina tog broja sadrži beskonačno mnogo članova tog niza koji se nalaze na parnim pozicijama,

$$b_n=1+\sin\frac{n\pi}{2}$$

- $2,\ \underline{\underline{1}},\ 0,\ \underline{\underline{1}},\ 2,\ \underline{\underline{1}},\ 0,\ \underline{\underline{1}},\ 2,\ \underline{\underline{1}},\ 0,\ \underline{\underline{1}},\ldots$
- Broj 2 je gomilište niza (b_n) jer svaka okolina tog broja sadrži beskonačno mnogo članova tog niza koji se nalaze na pozicijama s indeksima oblika 4k-3 za $k\in\mathbb{N}$, tj. podniz $(b_{4k-3})_{k\in\mathbb{N}}$ konvergira broju 2.
- Broj 1 je gomilište niza (b_n) jer svaka okolina tog broja sadrži beskonačno mnogo članova tog niza koji se nalaze na parnim pozicijama, tj. podniz $(b_{2k})_{k\in\mathbb{N}}$ konvergira broju 1.

$$b_n = 1 + \sin \frac{n\pi}{2}$$

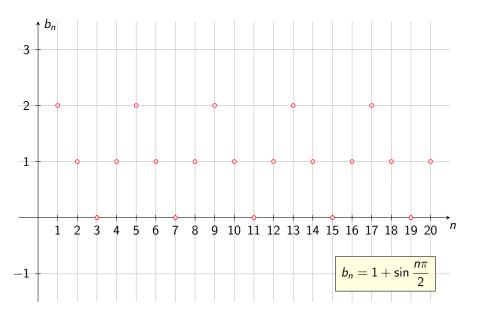
- $2, \ 1, \ \underline{0}, \ 1, \ 2, \ 1, \ \underline{0}, \ 1, \ 2, \ 1, \ \underline{0}, \ 1, \dots$
- Broj 2 je gomilište niza (b_n) jer svaka okolina tog broja sadrži beskonačno mnogo članova tog niza koji se nalaze na pozicijama s indeksima oblika 4k-3 za $k\in\mathbb{N}$, tj. podniz $(b_{4k-3})_{k\in\mathbb{N}}$ konvergira broju 2.
- Broj 1 je gomilište niza (b_n) jer svaka okolina tog broja sadrži beskonačno mnogo članova tog niza koji se nalaze na parnim pozicijama, tj. podniz $(b_{2k})_{k\in\mathbb{N}}$ konvergira broju 1.
- Broj 0 je gomilište niza (b_n) jer svaka okolina tog broja sadrži beskonačno mnogo članova tog niza koji se nalaze na pozicijama s indeksima oblika 4k-1 za $k \in \mathbb{N}$,

$$b_n=1+\sin\frac{n\pi}{2}$$

- $2, 1, \underline{0}, 1, 2, 1, \underline{0}, 1, 2, 1, \underline{0}, 1, \dots$
- Broj 2 je gomilište niza (b_n) jer svaka okolina tog broja sadrži beskonačno mnogo članova tog niza koji se nalaze na pozicijama s indeksima oblika 4k-3 za $k\in\mathbb{N}$, tj. podniz $(b_{4k-3})_{k\in\mathbb{N}}$ konvergira broju 2.
- Broj 1 je gomilište niza (b_n) jer svaka okolina tog broja sadrži beskonačno mnogo članova tog niza koji se nalaze na parnim pozicijama, tj. podniz $(b_{2k})_{k\in\mathbb{N}}$ konvergira broju 1.
- Broj 0 je gomilište niza (b_n) jer svaka okolina tog broja sadrži beskonačno mnogo članova tog niza koji se nalaze na pozicijama s indeksima oblika 4k-1 za $k\in\mathbb{N}$, tj. podniz $(b_{4k-1})_{k\in\mathbb{N}}$ konvergira broju 0.

$$b_n=1+\sin\frac{n\pi}{2}$$

- $2,\ 1,\ 0,\ 1,\ 2,\ 1,\ 0,\ 1,\ 2,\ 1,\ 0,\ 1,\dots$
- Broj 2 je gomilište niza (b_n) jer svaka okolina tog broja sadrži beskonačno mnogo članova tog niza koji se nalaze na pozicijama s indeksima oblika 4k − 3 za k ∈ N, tj. podniz (b_{4k-3})_{k∈N} konvergira broju 2.
- Broj 1 je gomilište niza (b_n) jer svaka okolina tog broja sadrži beskonačno mnogo članova tog niza koji se nalaze na parnim pozicijama, tj. podniz $(b_{2k})_{k\in\mathbb{N}}$ konvergira broju 1.
- Broj 0 je gomilište niza (b_n) jer svaka okolina tog broja sadrži beskonačno mnogo članova tog niza koji se nalaze na pozicijama s indeksima oblika 4k-1 za $k\in\mathbb{N}$, tj. podniz $(b_{4k-1})_{k\in\mathbb{N}}$ konvergira broju 0.
- Niz (b_n) nije konvergentan jer ima više od jednog gomilišta.



 $c_n = egin{cases} rac{1}{n}, & ext{ako je } n ext{ paran} \ \sqrt{n}, & ext{ako je } n ext{ neparan} \end{cases}$

c)
$$c_n = \begin{cases} \frac{1}{n}, & \text{ako je } n \text{ paran} \\ 1, \frac{1}{2}, \sqrt{3}, \frac{1}{4}, \sqrt{5}, \frac{1}{6}, \sqrt{7}, \frac{1}{8}, 3, \frac{1}{10}, \dots \end{cases}$$

/ 43

c)
$$c_n = \begin{cases} \frac{1}{n}, & \text{ako je } n \text{ paran} \\ 1, & \frac{1}{2}, \sqrt{3}, & \frac{1}{4}, \sqrt{5}, & \frac{1}{6}, \sqrt{7}, & \frac{1}{8}, 3, & \frac{1}{10}, \dots \end{cases}$$

• Broj 0 je gomilište niza (c_n) jer svaka okolina tog broja sadrži beskonačno mnogo članova tog niza koji se nalaze na parnim pozicijama,

c)
$$c_n = \begin{cases} \frac{1}{n}, & \text{ako je } n \text{ paran} \\ 1, \frac{1}{2}, \sqrt{3}, \frac{1}{4}, \sqrt{5}, \frac{1}{\underline{6}}, \sqrt{7}, \frac{1}{\underline{8}}, 3, \frac{1}{\underline{10}}, \dots \end{cases} \begin{cases} c_n = \begin{cases} \frac{1}{n}, & \text{ako je } n \text{ paran} \\ \sqrt{n}, & \text{ako je } n \text{ neparan} \end{cases}$$

• Broj 0 je gomilište niza (c_n) jer svaka okolina tog broja sadrži beskonačno mnogo članova tog niza koji se nalaze na parnim pozicijama, tj. podniz $(c_{2k})_{k\in\mathbb{N}}$ konvergira broju 0.

c)
$$c_n = \begin{cases} \frac{1}{n}, & \text{ako je } n \text{ paran} \\ 1, \frac{1}{2}, \sqrt{3}, \frac{1}{4}, \sqrt{5}, \frac{1}{6}, \sqrt{7}, \frac{1}{8}, 3, \frac{1}{10}, \dots \end{cases}$$
 $\begin{cases} c_n = \begin{cases} \frac{1}{n}, & \text{ako je } n \text{ paran} \\ \sqrt{n}, & \text{ako je } n \text{ neparan} \end{cases}$

- Broj 0 je gomilište niza (c_n) jer svaka okolina tog broja sadrži beskonačno mnogo članova tog niza koji se nalaze na parnim pozicijama, tj. podniz $(c_{2k})_{k\in\mathbb{N}}$ konvergira broju 0.
- Niz (c_n) ima samo jedno gomilište, ali ipak nije konvergentan.

c)
$$c_n = \begin{cases} \frac{1}{n}, & \text{ako je } n \text{ paran} \\ 1, \frac{1}{2}, \sqrt{3}, \frac{1}{4}, \sqrt{5}, \frac{1}{6}, \sqrt{7}, \frac{1}{8}, 3, \frac{1}{10}, \dots \end{cases}$$

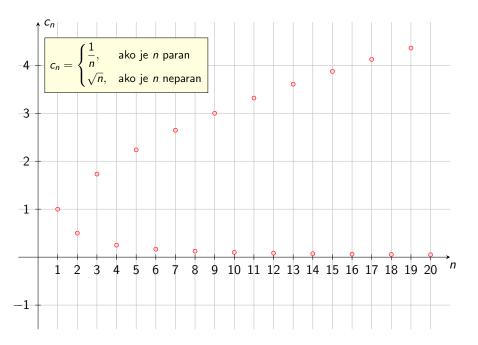
- Broj 0 je gomilište niza (c_n) jer svaka okolina tog broja sadrži beskonačno mnogo članova tog niza koji se nalaze na parnim pozicijama, tj. podniz $(c_{2k})_{k\in\mathbb{N}}$ konvergira broju 0.
- Niz (c_n) ima samo jedno gomilište, ali ipak nije konvergentan.
- U svakoj okolini broja 0 se nalazi beskonačno mnogo članova niza (c_n) koji se nalaze na parnim pozicijama (jer je 0 gomilište).

c)
$$c_n = \begin{cases} \frac{1}{n}, & \text{ako je } n \text{ paran} \\ \frac{1}{2}, & \frac{1}{2}, & \frac{\sqrt{3}}{4}, & \frac{1}{4}, & \frac{\sqrt{5}}{6}, & \frac{1}{6}, & \frac{\sqrt{7}}{8}, & \frac{1}{8}, & \frac{3}{2}, & \frac{1}{10}, \dots \end{cases}$$

- Broj 0 je gomilište niza (c_n) jer svaka okolina tog broja sadrži beskonačno mnogo članova tog niza koji se nalaze na parnim pozicijama, tj. podniz $(c_{2k})_{k\in\mathbb{N}}$ konvergira broju 0.
- Niz (c_n) ima samo jedno gomilište, ali ipak nije konvergentan.
- U svakoj okolini broja 0 se nalazi beskonačno mnogo članova niza (c_n) koji se nalaze na parnim pozicijama (jer je 0 gomilište).
- Međutim, izvan svake dovoljno male okoline broja 0 se nalazi također beskonačno mnogo članova niza (c_n) koji se nalaze na neparnim pozicijama pa 0 ne može biti limes niza (c_n) .

c)
$$c_n = \begin{cases} \frac{1}{n}, & \text{ako je } n \text{ paran} \\ \frac{1}{2}, & \frac{1}{2}, & \frac{\sqrt{3}}{4}, & \frac{1}{4}, & \frac{\sqrt{5}}{6}, & \frac{1}{6}, & \frac{\sqrt{7}}{8}, & \frac{1}{8}, & \frac{3}{2}, & \frac{1}{10}, \dots \end{cases}$$

- Broj 0 je gomilište niza (c_n) jer svaka okolina tog broja sadrži beskonačno mnogo članova tog niza koji se nalaze na parnim pozicijama, tj. podniz $(c_{2k})_{k\in\mathbb{N}}$ konvergira broju 0.
- Niz (c_n) ima samo jedno gomilište, ali ipak nije konvergentan.
- U svakoj okolini broja 0 se nalazi beskonačno mnogo članova niza (c_n) koji se nalaze na parnim pozicijama (jer je 0 gomilište).
- Međutim, izvan svake dovoljno male okoline broja 0 se nalazi također beskonačno mnogo članova niza (c_n) koji se nalaze na neparnim pozicijama pa 0 ne može biti limes niza (c_n) .
- Naime, podniz $(c_{2k-1})_{k\in\mathbb{N}}$ divergira $u + \infty$.



d) $d_n=egin{cases} p+rac{1}{p^k}, & ext{ako je } n=p^k ext{ za neki prosti broj } p ext{ i neki } k\in\mathbb{N} \ n, & ext{inače} \end{cases}$

d)
$$d_n = egin{cases} p + rac{1}{p^k}, & ext{ako je } n = p^k ext{ za neki prosti broj } p ext{ i neki } k \in \mathbb{N} \ n, & ext{inače} \end{cases}$$

• Za svaki prosti broj p, podniz $(d_{p^k})_{k\in\mathbb{N}}$ je oblika

$$p+\frac{1}{p}, p+\frac{1}{p^2}, p+\frac{1}{p^3}, p+\frac{1}{p^4}, \dots$$

i konvergira broju p.

)
$$d_n=egin{cases} p+rac{1}{p^k}, & ext{ako je }n=p^k ext{ za neki prosti broj }p ext{ i neki }k\in\mathbb{N} \ n, & ext{inače} \end{cases}$$

• Za svaki prosti broj p, podniz $(d_{p^k})_{k\in\mathbb{N}}$ je oblika

$$p+\frac{1}{p}, p+\frac{1}{p^2}, p+\frac{1}{p^3}, p+\frac{1}{p^4}, \dots$$

i konvergira broju *p*.

• Dakle, svaki prosti broj p je gomilište niza (d_n) . Stoga niz (d_n) ima prebrojivo beskonačno mnogo gomilišta.

$$d_n = egin{cases} p + rac{1}{p^k}, & ext{ako je } n = p^k ext{ za neki prosti broj } p ext{ i neki } k \in \mathbb{N}, \ n, & ext{inače} \end{cases}$$

ullet Za svaki prosti broj p, podniz $(d_{p^k})_{k\in\mathbb{N}}$ je oblika

$$p+\frac{1}{p}, p+\frac{1}{p^2}, p+\frac{1}{p^3}, p+\frac{1}{p^4}, \dots$$

i konvergira broju *p*.

- Dakle, svaki prosti broj p je gomilište niza (d_n) . Stoga niz (d_n) ima prebrojivo beskonačno mnogo gomilišta.
- Također, podniz niza (d_n) čiji članovi se nalaze na pozicijama koje nisu potencije prostog broja divergira u $+\infty$.

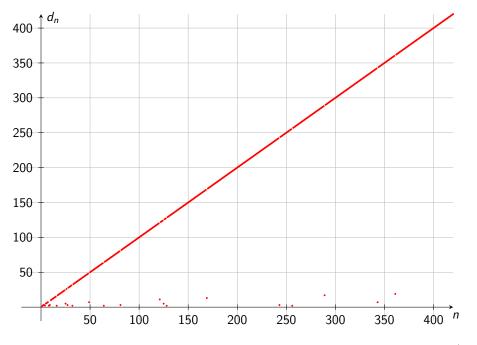
)
$$d_n=egin{cases} p+rac{1}{p^k}, & ext{ako je }n=p^k ext{ za neki prosti broj }p ext{ i neki }k\in\mathbb{N} \ n, & ext{inače} \end{cases}$$

ullet Za svaki prosti broj p, podniz $(d_{p^k})_{k\in\mathbb{N}}$ je oblika

$$p+\frac{1}{p}, p+\frac{1}{p^2}, p+\frac{1}{p^3}, p+\frac{1}{p^4}, \dots$$

i konvergira broju *p*.

- Dakle, svaki prosti broj p je gomilište niza (d_n) . Stoga niz (d_n) ima prebrojivo beskonačno mnogo gomilišta.
- Također, podniz niza (d_n) čiji članovi se nalaze na pozicijama koje nisu potencije prostog broja divergira u $+\infty$.
- Niz (d_n) nije konvergentan jer ima više od jednog gomilišta i još k tome sadrži podniz koji divergira u $+\infty$.

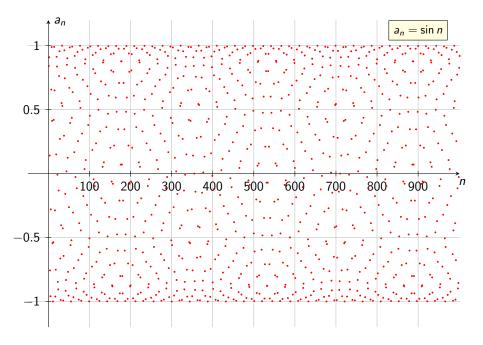


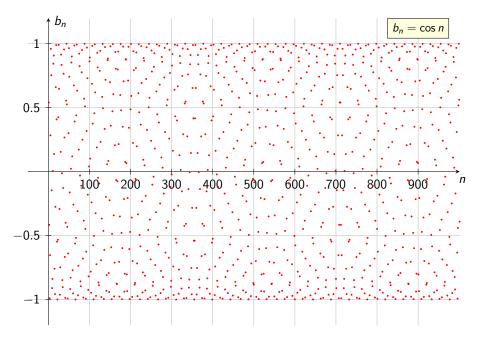
• Niz $a_n = \sin n$ ima neprebrojivo beskonačno mnogo gomilišta i skup svih njegovih gomilišta jednak je segmentu [-1,1].

- Niz $a_n = \sin n$ ima neprebrojivo beskonačno mnogo gomilišta i skup svih njegovih gomilišta jednak je segmentu [-1,1].
- Članovi niza (a_n) su gusto raspoređeni unutar segmenta [-1, 1], tj. u svakoj okolini bilo kojeg broja iz segmenta [-1, 1] se nalazi beskonačno mnogo članova niza (a_n) .

- Niz $a_n = \sin n$ ima neprebrojivo beskonačno mnogo gomilišta i skup svih njegovih gomilišta jednak je segmentu [-1,1].
- Članovi niza (a_n) su gusto raspoređeni unutar segmenta [-1, 1], tj. u svakoj okolini bilo kojeg broja iz segmenta [-1, 1] se nalazi beskonačno mnogo članova niza (a_n) .
- Niz $b_n = \cos n$ ima neprebrojivo beskonačno mnogo gomilišta i skup svih njegovih gomilišta jednak je segmentu [-1, 1].

- Niz $a_n = \sin n$ ima neprebrojivo beskonačno mnogo gomilišta i skup svih njegovih gomilišta jednak je segmentu [-1,1].
- Članovi niza (a_n) su gusto raspoređeni unutar segmenta [-1,1], tj. u svakoj okolini bilo kojeg broja iz segmenta [-1,1] se nalazi beskonačno mnogo članova niza (a_n) .
- Niz $b_n = \cos n$ ima neprebrojivo beskonačno mnogo gomilišta i skup svih njegovih gomilišta jednak je segmentu [-1, 1].
- Članovi niza (b_n) su gusto raspoređeni unutar segmenta [-1, 1], tj. u svakoj okolini bilo kojeg broja iz segmenta [-1, 1] se nalazi beskonačno mnogo članova niza (b_n) .





• Ako je $\omega \in \mathbb{R}$ takav da je $\frac{\omega}{\pi} \in \mathbb{R} \setminus \mathbb{Q}$, tada su članovi nizova

$$c_n = \sin(\omega n)$$
 i $d_n = \cos(\omega n)$

gusto raspoređeni unutar segmenta [-1,1], tj. skup njihovih gomilišta jednak je segmentu [-1,1].

Članovi nizova

$$u_n = \operatorname{tg} n$$
 i $v_n = \operatorname{ctg} n$

gusto su raspoređeni na skupu \mathbb{R} , tj. svaki realni broj je gomilište tih nizova.

drugi zadatak

Zadatak 2

Izračunajte sljedeće limese:

a)
$$\lim_{n \to +\infty} \frac{5n^2 - n - 7}{6n^3 - 5n^2 + 1}$$

b)
$$\lim_{n \to +\infty} \frac{5n^3 + 2n + 9}{6n^2 - 5n + 8}$$

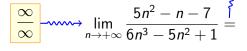
c)
$$\lim_{n \to +\infty} \frac{(n-1)^8}{3n^3(5+n)^5}$$

$$\lim_{n \to +\infty} \frac{5n^2 - n - 7}{6n^3 - 5n^2 + 1} =$$

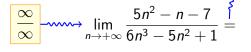
$$\frac{\infty}{\infty} \xrightarrow[n \to +\infty]{\lim_{n \to +\infty} \frac{5n^2 - n - 7}{6n^3 - 5n^2 + 1}} =$$

• Najveća potencija u brojniku je n^2 .

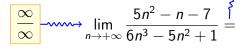
Rješenje



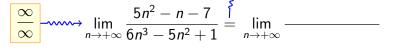
- Najveća potencija u brojniku je n^2 .
- Najveća potencija u nazivniku je n³.



- Najveća potencija u brojniku je n^2 .
- Najveća potencija u nazivniku je n^3 .
- Dijelimo brojnik i nazivnik s n^3 .



- Najveća potencija u brojniku je n^2 .
- Najveća potencija u nazivniku je n³.
- Dijelimo brojnik i nazivnik s n^3 .



- Najveća potencija u brojniku je n^2 .
- Najveća potencija u nazivniku je n³.
- Dijelimo brojnik i nazivnik s n^3 .



$$\lim_{n \to +\infty} \frac{5n^2 - n - 7}{6n^3 - 5n^2 + 1} \stackrel{\$}{=}$$

$$\lim_{n\to+\infty}$$
 -

$$\frac{5n^2-n-7}{n^3}$$

- Najveća potencija u brojniku je n².
- Najveća potencija u nazivniku je n³.
- Dijelimo brojnik i nazivnik s n^3 .



$$\lim_{n \to +\infty} \frac{5n^2 - n - 7}{6n^3 - 5n^2 + 1} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}}$$

- Najveća potencija u brojniku je n².
- Najveća potencija u nazivniku je n³.
- Dijelimo brojnik i nazivnik s n^3 .



$$\lim_{n \to +\infty} \frac{5n^2 - n - 7}{6n^3 - 5n^2 + 1}$$

$$\lim_{n \to +\infty} \frac{5n^2 - n - 7}{6n^3 - 5n^2 + 1} \stackrel{\text{for }}{=} \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} =$$

$$=\lim_{n o +\infty}$$

- Najveća potencija u brojniku je n².
- Najveća potencija u nazivniku je n³.
- Dijelimo brojnik i nazivnik s n^3 .



$$\lim_{n \to +\infty} \frac{5n^2 - n - 7}{6n^3 - 5n^2 + 1}$$

$$\lim_{n \to +\infty} \frac{5n^2 - n - 7}{6n^3 - 5n^2 + 1} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} =$$

$$=\lim_{\substack{n\to+\infty\\n\to+\infty}}\frac{\frac{5}{n}-\frac{1}{n^2}-\frac{7}{n^3}}{}$$

- Najveća potencija u brojniku je n².
- Najveća potencija u nazivniku je n³.
- Dijelimo brojnik i nazivnik s n^3 .



$$\lim_{n \to +\infty} \frac{5n^2 - n - 7}{6n^3 - 5n^2 + 1}$$

$$\lim_{n \to +\infty} \frac{5n^2 - n - 7}{6n^3 - 5n^2 + 1} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} =$$

$$= \lim_{n \to +\infty} \frac{\frac{5}{n} - \frac{1}{n^2} - \frac{7}{n^3}}{6 - \frac{5}{n} + \frac{1}{n^3}}$$

- Najveća potencija u brojniku je n².
- Najveća potencija u nazivniku je n³.
- Dijelimo brojnik i nazivnik s n^3 .



$$\lim_{n \to +\infty} \frac{5n^2 - n - 7}{6n^3 - 5n^2 + 1}$$

$$\lim_{n \to +\infty} \frac{5n^2 - n - 7}{6n^3 - 5n^2 + 1} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} =$$

$$= \lim_{n \to +\infty} \frac{\frac{5}{n} - \frac{1}{n^2} - \frac{7}{n^3}}{6 - \frac{5}{n} + \frac{1}{n^3}} = ----$$

- Najveća potencija u brojniku je n².
- Najveća potencija u nazivniku je n³.
 - Dijelimo brojnik i nazivnik s n³.



$$\lim_{n \to +\infty} \frac{5n^2 - n - 7}{6n^3 - 5n^2 + 1} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}}$$

$$= \lim_{n \to +\infty} \frac{\frac{5}{n} - \frac{1}{n^2} - \frac{7}{n^3}}{6 - \frac{5}{n} + \frac{1}{n^3}} = \frac{1}{6 - \frac{5}{n} + \frac{1}{n^3}}$$

$$\lim_{n \to +\infty} \frac{c}{n^p} = 0, \quad c, p \in \mathbb{R}, p > 0$$

- Najveća potencija u brojniku je n².
- Najveća potencija u nazivniku je n³.
 - Dijelimo brojnik i nazivnik s n³.



$$\lim_{n \to +\infty} \frac{5n^2 - n - 7}{6n^3 - 5n^2 + 1}$$

$$\frac{\infty}{\infty} - \lim_{n \to +\infty} \frac{5n^2 - n - 7}{6n^3 - 5n^2 + 1} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \frac{5n^2 - n - 7}{\frac{n^3}{n^3}}$$

$$= \lim_{n \to +\infty} \frac{\frac{5}{n} - \frac{1}{n^2} - \frac{7}{n^3}}{6 - \frac{5}{n} + \frac{1}{n^3}} = \frac{0 - 0 - 0}{\frac{3}{n^2}}$$

$$\lim_{n\to+\infty}\frac{c}{n^p}=0,\quad c,p\in\mathbb{R},\ p>0$$

- Najveća potencija u brojniku je n².
- Najveća potencija u nazivniku je n³.
- Dijelimo brojnik i nazivnik s n³.



$$\lim_{n \to +\infty} \frac{5n^2 - n - 7}{6n^3 - 5n^2 + 1} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{5n^2 - n - 7}{n^3}$$

$$= \lim_{n \to +\infty} \frac{\frac{5}{n} - \frac{1}{n^2} - \frac{7}{n^3}}{6 - \frac{5}{n} + \frac{1}{n^3}} = \frac{0 - 0 - 0}{6 - 0 + 0}$$

$$\lim_{n\to+\infty}\frac{c}{n^p}=0,\quad c,p\in\mathbb{R},\ p>0$$

- Najveća potencija u brojniku je n².
- Najveća potencija u nazivniku je n³.
- Dijelimo brojnik i nazivnik s n³.



$$\lim_{n \to \infty} \frac{5n^2 - n - 7}{6n^3 + 5n^2 + 1}$$

$$\lim_{n \to +\infty} \frac{5n^2 - n - 7}{6n^3 - 5n^2 + 1} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{5n^2 - n - 7}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{5n^2 - n - 7}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{5n^2 - n - 7}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{5n^2 - n - 7}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{5n^2 - n - 7}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{5n^2 - n - 7}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{5n^2 - n - 7}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{5n^2 - n - 7}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{5n^2 - n - 7}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{5n^2 - n - 7}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{5n^2 - n - 7}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{5n^2 - n - 7}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{5n^2 - n - 7}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{5n^2 - n - 7}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{5n^2 - n - 7}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{5n^2 - n - 7}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{5n^2 - n - 7}{\frac{6n^3 - 5n^2 + 1}{n^3}} = \lim_{n \to +\infty} \frac{5n^2 - n - 7}$$

$$= \lim_{n \to +\infty} \frac{\frac{5}{n} - \frac{1}{n^2} - \frac{7}{n^3}}{6 - \frac{5}{n} + \frac{1}{n^3}} = \frac{0 - 0 - 0}{6 - 0 + 0} = \frac{0}{6}$$

$$\lim_{n\to+\infty}\frac{c}{n^p}=0,\quad c,p\in\mathbb{R},\ p>0$$

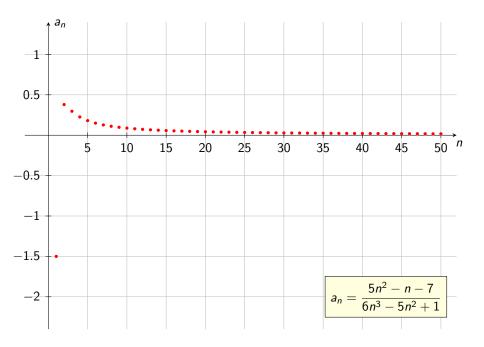
- Najveća potencija u brojniku je n².
- Najveća potencija u nazivniku je n³.
- Dijelimo brojnik i nazivnik s n³.

$$\frac{\infty}{\infty}$$

 $\frac{\infty}{\infty} - \lim_{n \to +\infty} \frac{5n^2 - n - 7}{6n^3 - 5n^2 + 1} = \lim_{n \to +\infty} \frac{\frac{5n^2 - n - 7}{n^3}}{6n^3 - 5n^2 + 1} = \frac{5n^2 - n - 7}{6n^3 - 5n^2 + 1} = \frac{5n^2 -$

$$= \lim_{n \to +\infty} \frac{\frac{5}{n} - \frac{1}{n^2} - \frac{7}{n^3}}{6 - \frac{5}{n} + \frac{1}{n^3}} = \frac{0 - 0 - 0}{6 - 0 + 0} = \frac{0}{6} = 0$$

$$\lim_{n\to+\infty}\frac{c}{n^p}=0,\quad c,p\in\mathbb{R},\ p>0$$

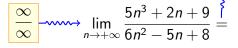


$$\lim_{n \to +\infty} \frac{5n^3 + 2n + 9}{6n^2 - 5n + 8} =$$

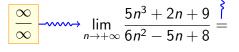
$$\lim_{n \to +\infty} \frac{5n^3 + 2n + 9}{6n^2 - 5n + 8} =$$



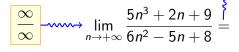
• Najveća potencija u brojniku je n^3 .



- Najveća potencija u brojniku je n^3 .
- Najveća potencija u nazivniku je n².



- Najveća potencija u brojniku je n^3 .
- Najveća potencija u nazivniku je n^2 .
 - Dijelimo brojnik i nazivnik s n^3 .





- Najveća potencija u brojniku je *n*³.
- Najveća potencija u nazivniku je n².
 - Dijelimo brojnik i nazivnik s n^3 .



$$\lim_{n \to +\infty} \frac{5n^3 + 2n + 1}{6n^2 + 5n + 1}$$

$$\lim_{n \to +\infty}$$
 -



- Najveća potencija u brojniku je n^3 .
- Najveća potencija u nazivniku je n^2 .
- Dijelimo brojnik i nazivnik s n^3 .



$$5n^3 + 2n + 9$$

$$\lim_{n \to \infty} \frac{5n^3 + 2n + 9}{n^3}$$



- Najveća potencija u brojniku je n³.
- Najveća potencija u nazivniku je n².
 - Dijelimo brojnik i nazivnik s n^3 .



$$\lim_{n \to +\infty} \frac{5n^3 + 2n + 9}{6n^2 - 5n + 8} \stackrel{=}{=} \lim_{n \to +\infty} \frac{\frac{5n^3 + 2n + 9}{n^3}}{\frac{6n^2 - 5n + 8}{n^3}}$$

- Najveća potencija u brojniku je n³.
- Najveća potencija u nazivniku je n².
 - Dijelimo brojnik i nazivnik s n^3 .



$$\lim_{n \to +\infty} \frac{5n^3 + 2n + 9}{6n^2 - 5n + 8} = \lim_{n \to +\infty} \frac{\frac{5n^3 + 2n + 9}{n^3}}{\frac{6n^2 - 5n + 8}{n^3}} =$$

$$=\lim_{n\to+\infty}$$

- Najveća potencija u brojniku je n³.
- Najveća potencija u nazivniku je n².
 - Dijelimo brojnik i nazivnik s n^3 .



$$\lim_{n \to +\infty} \frac{5n^3 + 2n + 9}{6n^2 - 5n + 8}$$

$$\lim_{n \to +\infty} \frac{5n^3 + 2n + 9}{6n^2 - 5n + 8} = \lim_{n \to +\infty} \frac{\frac{5n^3 + 2n + 9}{n^3}}{\frac{6n^2 - 5n + 8}{n^3}} =$$

$$= \lim_{n \to +\infty} \frac{5 + \frac{2}{n^2} + \frac{9}{n^3}}{n^3}$$

- Najveća potencija u brojniku je n³.
- Najveća potencija u nazivniku je n².
 - Dijelimo brojnik i nazivnik s n^3 .



$$\lim_{n \to +\infty} \frac{5n^3 + 2n}{6n^2 - 5n}$$

$$\lim_{n \to +\infty} \frac{5n^3 + 2n + 9}{6n^2 - 5n + 8} = \lim_{n \to +\infty} \frac{\frac{5n^3 + 2n + 9}{n^3}}{\frac{6n^2 - 5n + 8}{n^3}} =$$

$$= \lim_{n \to +\infty} \frac{5 + \frac{2}{n^2} + \frac{9}{n^3}}{\frac{6}{n} - \frac{5}{n^2} + \frac{8}{n^3}}$$

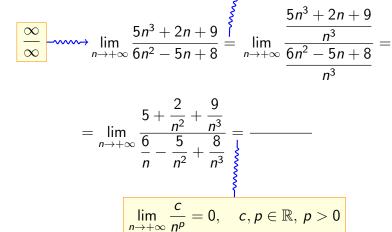
- Najveća potencija u brojniku je n³.
- Najveća potencija u nazivniku je n².
 - Dijelimo brojnik i nazivnik s n^3 .

$$\lim_{n \to +\infty} \frac{5n^3 + 2n + 9}{6n^2 + 5n + 8}$$

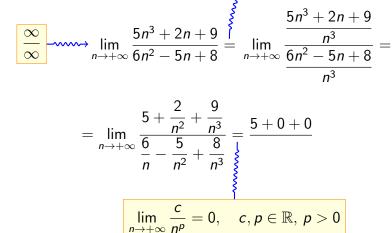
$$\lim_{n \to +\infty} \frac{5n^3 + 2n + 9}{6n^2 - 5n + 8} = \lim_{n \to +\infty} \frac{\frac{5n^3 + 2n + 9}{n^3}}{\frac{6n^2 - 5n + 8}{3}} =$$

$$= \lim_{n \to +\infty} \frac{5 + \frac{2}{n^2} + \frac{9}{n^3}}{\frac{6}{n} - \frac{5}{n^2} + \frac{8}{n^3}} = -$$

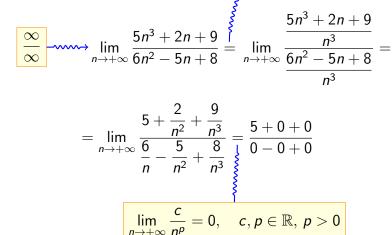
- Najveća potencija u brojniku je n³.
- Najveća potencija u nazivniku je n².
 - Dijelimo brojnik i nazivnik s n^3 .



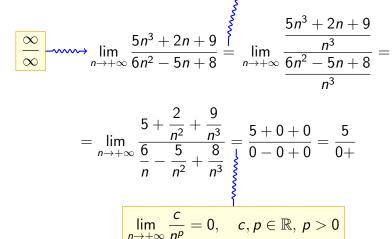
- Najveća potencija u brojniku je n³.
- Najveća potencija u nazivniku je n².
 - Dijelimo brojnik i nazivnik s n^3 .



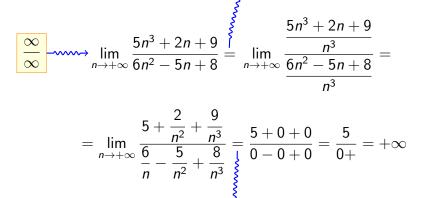
- Najveća potencija u brojniku je n³.
- Najveća potencija u nazivniku je n^2 .
 - Dijelimo brojnik i nazivnik s n^3 .



- Najveća potencija u brojniku je n³.
- Najveća potencija u nazivniku je n².
 - Dijelimo brojnik i nazivnik s n^3 .



- Najveća potencija u brojniku je n³.
- Najveća potencija u nazivniku je n².
 - Dijelimo brojnik i nazivnik s n^3 .



 $\lim_{n\to+\infty}\frac{c}{n^p}=0,\quad c,p\in\mathbb{R},\ p>0$

- Najveća potencija u brojniku je n³.
- Najveća potencija u nazivniku je n^2 .
 - Dijelimo brojnik i nazivnik s n^3 .
- Za jako veliki $n \in \mathbb{N}$ vrijedi $\frac{6}{n} \frac{5}{n^2} > 0$.



$$= \lim_{n \to +\infty} \frac{5 + \frac{2}{n^2} + \frac{9}{n^3}}{\frac{6}{n} - \frac{5}{n^2} + \frac{8}{n^3}} = \frac{5 + 0 + 0}{0 - 0 + 0} = \frac{5}{0 +} = +\infty$$

$$\lim_{n \to +\infty} \frac{c}{n^p} = 0, \quad c, p \in \mathbb{R}, p > 0$$

- Najveća potencija u brojniku je n³.
- Najveća potencija u nazivniku je n^2 .
 - Dijelimo brojnik i nazivnik s n^3 .
- Za jako veliki $n \in \mathbb{N}$ vrijedi $\frac{6}{n} \frac{5}{n^2} > 0$.
- Dakle, za jako veliki $n \in \mathbb{N}$ je izraz $\frac{6}{n} \frac{5}{n^2} + \frac{8}{n^3}$ jako blizu nule s desne (plus) strane.



$$= \lim_{n \to +\infty} \frac{5 + \frac{2}{n^2} + \frac{9}{n^3}}{\frac{6}{n} - \frac{5}{n^2} + \frac{8}{n^3}} = \frac{5 + 0 + 0}{0 - 0 + 0} = \frac{5}{0 +} = +\infty$$

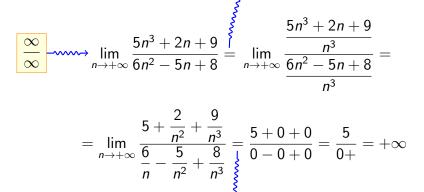
$$\lim_{n \to +\infty} \frac{c}{n^p} = 0, \quad c, p \in \mathbb{R}, p > 0$$

- Najveća potencija u brojniku je n³.
- Najveća potencija u nazivniku je n^2 .
- Dijelimo brojnik i nazivnik s n^3 .
- Za jako veliki $n \in \mathbb{N}$ vrijedi $\frac{6}{n} \frac{5}{n^2} > 0$.
- Dakle, za jako veliki $n \in \mathbb{N}$ je izraz $\frac{6}{n} \frac{5}{n^2} + \frac{8}{n^3}$ jako blizu nule s desne (plus) strane.
- $\frac{5}{0+}$ čitamo kao "pet kroz jako mali pozitivni broj".

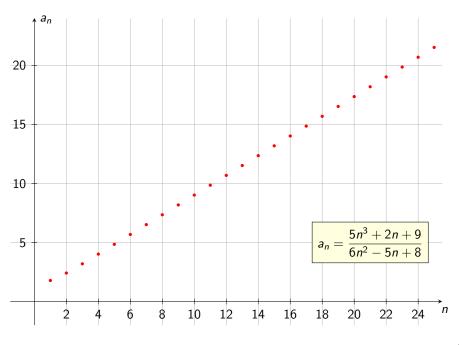
$$= \lim_{n \to +\infty} \frac{5 + \frac{2}{n^2} + \frac{9}{n^3}}{\frac{6}{n} - \frac{5}{n^2} + \frac{8}{n^3}} = \frac{5 + 0 + 0}{0 - 0 + 0} = \frac{5}{0 +} = +\infty$$

$$\lim_{n \to +\infty} \frac{c}{n^p} = 0, \quad c, p \in \mathbb{R}, p > 0$$

- Najveća potencija u brojniku je n³.
 Najveća potencija u nazivniku je n².
- Najveca potencija u nazivinku je n
 - Dijelimo brojnik i nazivnik s n^3 .



 $\lim_{n\to+\infty}\frac{c}{n^p}=0,\quad c,p\in\mathbb{R},\ p>0$



c)

$$\lim_{n\to+\infty}\frac{(n-1)^8}{3n^3(5+n)^5}=$$

c)

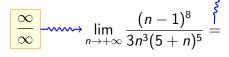
$$\frac{\infty}{\infty} \longrightarrow \lim_{n \to +\infty} \frac{(n-1)^8}{3n^3(5+n)^5} =$$

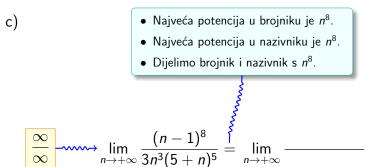
• Najveća potencija u brojniku je n⁸. $\lim_{n\to+\infty}\frac{(n-1)^8}{3n^3(5+n)^5} \stackrel{\text{g}}{=}$

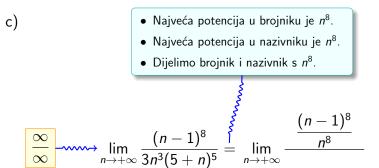
Najveća potencija u brojniku je n⁸.
Najveća potencija u nazivniku je n⁸.



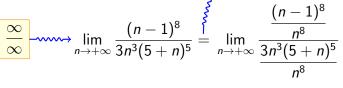
- Najveća potencija u brojniku je n^8 .
- Najveća potencija u nazivniku je *n*⁸.
 - Dijelimo brojnik i nazivnik s n^8 .



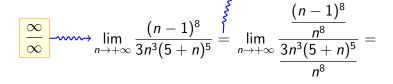




Najveća potencija u brojniku je n⁸.
Najveća potencija u nazivniku je n⁸.
Dijelimo brojnik i nazivnik s n⁸.

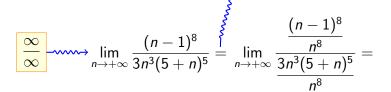


- Najveća potencija u brojniku je *n*⁸.
- Najveća potencija u nazivniku je n⁸.
 - Dijelimo brojnik i nazivnik s n^8 .



$$=\lim_{n\to+\infty}$$

- Najveća potencija u brojniku je *n*⁸.
- Najveća potencija u nazivniku je n⁸.
 - Dijelimo brojnik i nazivnik s n^8 .



$$= \lim_{n \to +\infty} \frac{\left(\frac{n-1}{n}\right)^{6}}{n}$$

- Najveća potencija u brojniku je *n*⁸.
- Najveća potencija u nazivniku je n⁸.
 - Dijelimo brojnik i nazivnik s n^8 .

$$\frac{\infty}{\infty} \longrightarrow \lim_{n \to +\infty} \frac{(n-1)^8}{3n^3(5+n)^5} = \lim_{n \to +\infty} \frac{\frac{(n-1)^8}{n^8}}{\frac{3n^3(5+n)^5}{n^8}} = \lim_{n \to +\infty} \frac{\frac{(n-1)^8}{n^8}}{\frac{(n-1)^8}{n^8}} = \lim_{n \to +\infty} \frac{(n-1)^8}{\frac{(n-1)^8}{n^8}} = \lim_{n \to +\infty$$

$$= \lim_{n \to +\infty} \frac{\left(\frac{n-1}{n}\right)^8}{\frac{3n^3}{n^3} \cdot \left(\frac{5+n}{n}\right)^5}$$

- Najveća potencija u brojniku je *n*⁸.
- Najveća potencija u nazivniku je n⁸.
 - Dijelimo brojnik i nazivnik s n^8 .

$$\frac{\infty}{\infty} \longrightarrow \lim_{n \to +\infty} \frac{(n-1)^8}{3n^3(5+n)^5} = \lim_{n \to +\infty} \frac{\frac{(n-1)^8}{n^8}}{\frac{3n^3(5+n)^5}{n^8}} = \lim_{n \to +\infty} \frac{\frac{(n-1)^8}{n^8}}{\frac{(n-1)^8}{n^8}} = \lim_{n \to +\infty} \frac{(n-1)^8}{\frac{(n-1)^8}{n^8}} = \lim_{n \to +\infty$$

$$= \lim_{n \to +\infty} \frac{\left(\frac{n-1}{n}\right)^8}{\frac{3n^3}{n^3} \cdot \left(\frac{5+n}{n}\right)^5} = \lim_{n \to +\infty} - \cdots$$

- Najveća potencija u brojniku je *n*⁸.
- Najveća potencija u nazivniku je n⁸.
 - Dijelimo brojnik i nazivnik s n^8 .

$$\frac{\infty}{\infty} \longrightarrow \lim_{n \to +\infty} \frac{(n-1)^8}{3n^3(5+n)^5} = \lim_{n \to +\infty} \frac{\frac{(n-1)^8}{n^8}}{\frac{3n^3(5+n)^5}{n^8}} = \lim_{n \to +\infty} \frac{\frac{(n-1)^8}{n^8}}{\frac{(n-1)^8}{n^8}} = \lim_{n \to +\infty} \frac{(n-1)^8}{\frac{(n-1)^8}{n^8}} = \lim_{n \to +\infty$$

$$= \lim_{n \to +\infty} \frac{\left(\frac{n-1}{n}\right)^8}{\frac{3n^3}{n^3} \cdot \left(\frac{5+n}{n}\right)^5} = \lim_{n \to +\infty} \frac{\left(1-\frac{1}{n}\right)^8}{}$$

- Najveća potencija u brojniku je *n*⁸.
- Najveća potencija u nazivniku je n⁸.
 - Dijelimo brojnik i nazivnik s n^8 .

$$\frac{\infty}{\infty} \longrightarrow \lim_{n \to +\infty} \frac{(n-1)^8}{3n^3(5+n)^5} = \lim_{n \to +\infty} \frac{\frac{(n-1)^8}{n^8}}{\frac{3n^3(5+n)^5}{n^8}} = \lim_{n \to +\infty} \frac{(n-1)^8}{\frac{n^8}{n^8}} = \lim_{n \to +\infty} \frac{(n-1)^8$$

$$= \lim_{n \to +\infty} \frac{\left(\frac{n-1}{n}\right)^8}{\frac{3n^3}{n^3} \cdot \left(\frac{5+n}{n}\right)^5} = \lim_{n \to +\infty} \frac{\left(1-\frac{1}{n}\right)^8}{3 \cdot \left(\frac{5}{n}+1\right)^5}$$

- Najveća potencija u brojniku je *n*⁸.
- Najveća potencija u nazivniku je n⁸.
 - Dijelimo brojnik i nazivnik s n^8 .

$$\frac{\infty}{\infty} \longrightarrow \lim_{n \to +\infty} \frac{(n-1)^8}{3n^3(5+n)^5} = \lim_{n \to +\infty} \frac{\frac{(n-1)^8}{n^8}}{\frac{3n^3(5+n)^5}{n^8}} =$$

$$= \lim_{n \to +\infty} \frac{\left(\frac{n-1}{n}\right)^8}{\frac{3n^3}{n^3} \cdot \left(\frac{5+n}{n}\right)^5} = \lim_{n \to +\infty} \frac{\left(1-\frac{1}{n}\right)^8}{3 \cdot \left(\frac{5}{n}+1\right)^5} = ---$$

- Najveća potencija u brojniku je n⁸.
 Najveća potencija u nazivniku je n⁸.
- Dijelimo brojnik i nazivnik s n^8 .

$$\lim_{n \to +\infty} \frac{(n-1)^8}{3n^3(5+n)^5} = \lim_{n \to +\infty} \frac{\frac{(n-1)^8}{n^8}}{\frac{3n^3(5+n)^5}{n^8}} =$$

$$= \lim_{n \to +\infty} \frac{\left(\frac{n-1}{n}\right)^8}{\frac{3n^3}{n^3} \cdot \left(\frac{5+n}{n}\right)^5} = \lim_{n \to +\infty} \frac{\left(1 - \frac{1}{n}\right)^8}{3 \cdot \left(\frac{5}{n} + 1\right)^5} = \frac{1}{3 \cdot \left(\frac{5}{n} + 1\right)^5}$$

$$\lim_{n \to +\infty} \frac{c}{n^p} = 0, \quad c, p \in \mathbb{R}, p > 0$$

- Najveća potencija u brojniku je n⁸. Najveća potencija u nazivniku je n⁸.
- Dijelimo brojnik i nazivnik s n⁸.

$$\frac{\infty}{\infty} \longrightarrow \lim_{n \to +\infty} \frac{(n-1)^8}{3n^3(5+n)^5} = \lim_{n \to +\infty} \frac{\frac{(n-1)^8}{n^8}}{\frac{3n^3(5+n)^5}{n^8}} =$$

$$=\lim_{n\to+\infty}\frac{\left(\frac{n-1}{n}\right)^8}{\frac{3n^3}{n^3}\cdot\left(\frac{5+n}{n}\right)^5}=\lim_{n\to+\infty}\frac{\left(1-\frac{1}{n}\right)^8}{3\cdot\left(\frac{5}{n}+1\right)^5}=\frac{(1-0)^8}{3\cdot\left(\frac{5}{n}+1\right)^5}$$

$$\lim_{n\to+\infty}\frac{c}{n^p}=0,\quad c,p\in\mathbb{R},\,p>0$$

$$\in \mathbb{R}, \, p > 0$$

- Najveća potencija u brojniku je n⁸.
 Najveća potencija u nazivniku je n⁸.
- Dijelimo brojnik i nazivnik s n^8 .

$$\lim_{n \to +\infty} \frac{(n-1)^8}{3n^3(5+n)^5} = \lim_{n \to +\infty} \frac{\frac{(n-1)^8}{n^8}}{\frac{3n^3(5+n)^5}{n^8}} =$$

$$= \lim_{n \to +\infty} \frac{\left(\frac{n-1}{n}\right)^{8}}{\frac{3n^{3}}{n^{3}} \cdot \left(\frac{5+n}{n}\right)^{5}} = \lim_{n \to +\infty} \frac{\left(1 - \frac{1}{n}\right)^{8}}{3 \cdot \left(\frac{5}{n} + 1\right)^{5}} = \frac{(1-0)^{8}}{3 \cdot (0+1)^{5}}$$

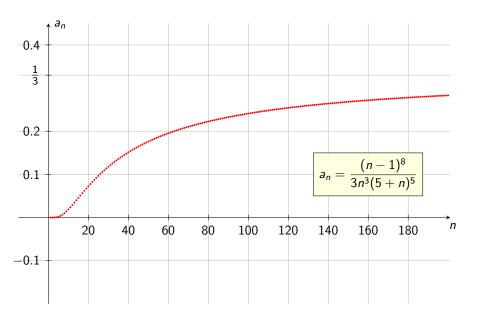
$$\lim_{n \to +\infty} \frac{c}{n^{p}} = 0, \quad c, p \in \mathbb{R}, p > 0$$

- Najveća potencija u brojniku je n⁸.
 Najveća potencija u nazivniku je n⁸.
- Dijelimo brojnik i nazivnik s n^8 .

$$\frac{\infty}{\infty} - \cdots \longrightarrow \lim_{n \to +\infty} \frac{(n-1)^8}{3n^3(5+n)^5} = \lim_{n \to +\infty} \frac{\frac{(n-1)^8}{n^8}}{\frac{3n^3(5+n)^5}{n^8}} =$$

$$= \lim_{n \to +\infty} \frac{\left(\frac{n-1}{n}\right)^{8}}{\frac{3n^{3}}{n^{3}} \cdot \left(\frac{5+n}{n}\right)^{5}} = \lim_{n \to +\infty} \frac{\left(1 - \frac{1}{n}\right)^{8}}{3 \cdot \left(\frac{5}{n} + 1\right)^{5}} = \frac{(1-0)^{8}}{3 \cdot (0+1)^{5}} = \frac{1}{3}$$

$$\lim_{n \to +\infty} \frac{c}{n^{p}} = 0, \quad c, p \in \mathbb{R}, p > 0$$



treći zadatak

Zadatak 3

Izračunajte sljedeće limese:

a)
$$\lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{2n^2 - 1}}$$

b)
$$\lim_{n \to +\infty} \frac{\sqrt{n+2}}{\sqrt{n+1} + \sqrt{n+2}}$$

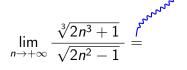
c)
$$\lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n + n}}{n^2 + n}$$

$$\lim_{n\to+\infty}\frac{\sqrt[3]{2n^3+1}}{\sqrt{2n^2-1}}=$$

$$\lim_{n\to+\infty}\frac{\sqrt[3]{2n^3+1}}{\sqrt{2n^2-1}}=$$



• Najveća potencija u brojniku je $\sqrt[3]{n^3}=n$.





- Najveća potencija u brojniku je $\sqrt[3]{n^3} = n$.
- Najveća potencija u nazivniku je $\sqrt{n^2} = n$.

a)

 $\lim_{n\to+\infty}\frac{\sqrt[3]{2n^3+1}}{\sqrt{2n^2-1}}=\int_{-\infty}^{\infty}$

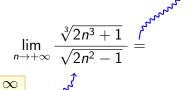


 ∞

• Najveća potencija u brojniku je $\sqrt[3]{n^3} = n$.

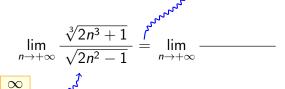
• Najveća potencija u nazivniku je $\sqrt{n^2} = n$.

ullet Dijelimo brojnik i nazivnik s n.



 ∞

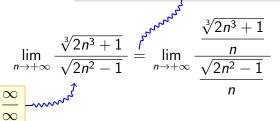
- Najveća potencija u brojniku je $\sqrt[3]{n^3} = n$.
- Najveća potencija u nazivniku je $\sqrt{n^2} = n$.
- ullet Dijelimo brojnik i nazivnik s n.



- Najveća potencija u brojniku je $\sqrt[3]{n^3} = n$.
- Najveća potencija u nazivniku je $\sqrt{n^2} = n$.
- Dijelimo brojnik i nazivnik s n.

$$\lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{2n^2 - 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{n}$$

- Najveća potencija u brojniku je $\sqrt[3]{n^3} = n$.
- Najveća potencija u nazivniku je $\sqrt{n^2} = n$.
- Dijelimo brojnik i nazivnik s n.

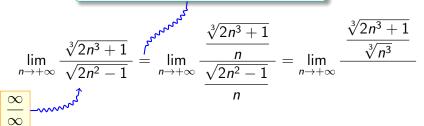


 ∞

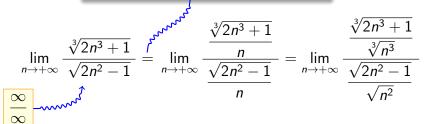
- Najveća potencija u brojniku je $\sqrt[3]{n^3} = n$.
- Najveća potencija u nazivniku je $\sqrt{n^2} = n$.
 - Dijelimo brojnik i nazivnik s n.

$$\lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{2n^2 - 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\frac{n}{\sqrt{2n^2 - 1}}} = \lim_{n \to +\infty} \frac{1}{n}$$

- Najveća potencija u brojniku je $\sqrt[3]{n^3} = n$.
- Najveća potencija u nazivniku je $\sqrt{n^2} = n$.
- ullet Dijelimo brojnik i nazivnik s n.



- Najveća potencija u brojniku je $\sqrt[3]{n^3} = n$.
- Najveća potencija u nazivniku je $\sqrt{n^2} = n$.
- Dijelimo brojnik i nazivnik s n.

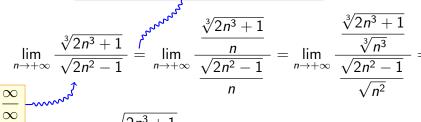


- Najveća potencija u brojniku je $\sqrt[3]{n^3} = n$.
- Najveća potencija u nazivniku je $\sqrt{n^2} = n$.
 - Dijelimo brojnik i nazivnik s n.

$$\lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{2n^2 - 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\frac{\sqrt{2n^2 - 1}}{n}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\frac{\sqrt[3]{2n^3 + 1}}{\sqrt{n^2}}} = \frac{1}{1}$$

$$=\lim_{n\to+\infty}$$

- Najveća potencija u brojniku je $\sqrt[3]{n^3} = n$.
- Najveća potencija u nazivniku je $\sqrt{n^2} = n$.
 - ullet Dijelimo brojnik i nazivnik s n.



$$= \lim_{n \to +\infty} \frac{\sqrt[3]{\frac{2n^3 + 1}{n^3}}}{\sqrt[3]{\frac{2n^3 + 1}{n^3}}}$$

- Najveća potencija u brojniku je $\sqrt[3]{n^3} = n$.
- Najveća potencija u nazivniku je $\sqrt{n^2} = n$.
 - Dijelimo brojnik i nazivnik s n.

$$\lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{2n^2 - 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\frac{n}{\sqrt{2n^2 - 1}}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^2 - 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3$$

$$= \lim_{n \to +\infty} \frac{\sqrt[3]{\frac{2n^3 + 1}{n^3}}}{\sqrt{\frac{2n^2 - 1}{n^2}}}$$

- Najveća potencija u brojniku je $\sqrt[3]{n^3} = n$.
- Najveća potencija u nazivniku je $\sqrt{n^2} = n$.
- Dijelimo brojnik i nazivnik s n.

$$\lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{2n^2 - 1}} = \lim_{n \to +\infty} \frac{\frac{\sqrt[3]{2n^3 + 1}}{n}}{\frac{\sqrt{2n^2 - 1}}{n}} = \lim_{n \to +\infty} \frac{\frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{n}}}{\frac{\sqrt{2n^2 - 1}}{\sqrt{n^2}}} = \frac{1}{2n^3 + 1}$$

- Najveća potencija u brojniku je $\sqrt[3]{n^3} = n$.
- Najveća potencija u nazivniku je $\sqrt{n^2} = n$.
 - Dijelimo brojnik i nazivnik s n.

$$\lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{2n^2 - 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\frac{\sqrt{2n^2 - 1}}{n}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^2 - 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^2 - 1}} = \lim_{n \to +\infty} \sqrt[3]{\frac{\sqrt{2n^2 - 1}}{\sqrt{n^2}}} = \lim_{n \to +\infty} \sqrt[3]{\frac{\sqrt{2n^3 + 1}}{\sqrt{n^3}}} = \lim_{n \to +\infty} \sqrt[3]{\frac{\sqrt{2n^3 + 1}}{\sqrt{2n^3 + 1}}} = \lim_{n \to +\infty} \sqrt[3]{\frac{\sqrt{2n^3 + 1}}{\sqrt{n^3}}} = \lim_{n \to +\infty} \sqrt[3]{\frac{\sqrt{2n^3 + 1}}{\sqrt{2n^3 + 1}}} = \lim_{n \to +\infty} \sqrt[3]{\frac{\sqrt{2n^3 + 1}}{\sqrt{2n^3 + 1}}} = \lim_{n \to +\infty} \sqrt[3]{\frac{\sqrt{2n^3 + 1}}{\sqrt{2n^3 + 1}}} = \lim_{n \to +\infty} \sqrt[3]{\frac{\sqrt{2n^3 + 1}}{\sqrt{2n^3 + 1}}} = \lim_{n \to +\infty} \sqrt[3]{\frac{\sqrt{2n^3 + 1}}{\sqrt{2n^3 + 1}}} = \lim_{n \to +\infty} \sqrt[3]{\frac{\sqrt{2n^3 + 1}}{\sqrt{2n^3 + 1}}} = \lim_{n \to +\infty} \sqrt[3]{\frac{\sqrt{2n^3 + 1}}{\sqrt{2n^3 + 1}}} = \lim_{n \to +\infty} \sqrt[3]{\frac{\sqrt{2n^3 + 1}}{\sqrt{2n^3 + 1}}} = \lim_{n \to +\infty} \sqrt[3]{\frac{\sqrt{2n^3 + 1}}{\sqrt{2n^3 + 1}}} = \lim_{n \to +\infty} \sqrt[3]{\frac{\sqrt{2n^3 + 1}}{\sqrt{2n^3 + 1}}} = \lim_{n \to +\infty} \sqrt[3]{\frac{\sqrt{2n^3 + 1}}{\sqrt{2n^3 + 1}}} = \lim_{n \to +\infty} \sqrt[3]{\frac{\sqrt{2n^3 + 1}}{\sqrt{2n^3 + 1}}} = \lim_{n \to +\infty} \sqrt[3]{\frac{\sqrt{2n^3 + 1}}{\sqrt{2n^3 + 1}}} = \lim_{n \to +\infty} \sqrt[3]{\frac{\sqrt{2n^3 + 1}}{\sqrt{2n^3 + 1}}} = \lim_{n \to +\infty} \sqrt[3]{\frac{\sqrt{2n^3 + 1}}{\sqrt{2n^3 + 1}}} = \lim_{n \to +\infty} \sqrt[3]{\frac{\sqrt{2n^3 + 1}}{\sqrt{2n^3 + 1}}} = \lim_{n \to +\infty} \sqrt[3]{\frac{\sqrt{2n^3 + 1}}{\sqrt{2n^3 + 1}}} = \lim_$$

- Najveća potencija u brojniku je $\sqrt[3]{n^3} = n$.
- Najveća potencija u nazivniku je $\sqrt{n^2} = n$.
 - Dijelimo brojnik i nazivnik s n.

$$\lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{2n^2 - 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\frac{\sqrt{2n^2 - 1}}{n}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^2 - 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^2 - 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3$$

$$= \lim_{n \to +\infty} \frac{\sqrt[3]{\frac{2n^2 + 1}{n^3}}}{\sqrt{\frac{2n^2 - 1}{n^2}}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2 + \frac{1}{n^3}}}{\sqrt{2 - \frac{1}{n^2}}}$$

- Najveća potencija u brojniku je $\sqrt[3]{n^3} = n$.
- Najveća potencija u nazivniku je $\sqrt{n^2} = n$.
 - ullet Dijelimo brojnik i nazivnik s n.

$$\lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{2n^2 - 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\frac{n}{\sqrt{2n^2 - 1}}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{n}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 +$$

$$= \lim_{n \to +\infty} \frac{\sqrt[3]{\frac{2n^3 + 1}{n^3}}}{\sqrt{\frac{2n^2 - 1}{n^2}}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2 + \frac{1}{n^3}}}{\sqrt{2 - \frac{1}{n^2}}} = ---$$

- Najveća potencija u brojniku je $\sqrt[3]{n^3} = n$.
- Najveća potencija u nazivniku je $\sqrt{n^2} = n$.
 - Dijelimo brojnik i nazivnik s n.

$$\lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{2n^2 - 1}} = \lim_{n \to +\infty} \frac{\frac{\sqrt[3]{2n^3 + 1}}{n}}{\frac{\sqrt{2n^2 - 1}}{n}} = \lim_{n \to +\infty} \frac{\frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{n}}}{\frac{\sqrt{2n^2 - 1}}{\sqrt{n^2}}} = \frac{1}{\sqrt[3]{2n^3 + 1}}$$

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

$$\frac{c}{n^p} = 0, \quad c, p \in \mathbb{R}, \ p > 0$$

- Najveća potencija u brojniku je $\sqrt[3]{n^3} = n$.
- Najveća potencija u nazivniku je $\sqrt{n^2} = n$.
- Dijelimo brojnik i nazivnik s n.

$$\lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{2n^2 - 1}} \stackrel{\text{formula}}{=} \lim_{n \to +\infty} \frac{\frac{\sqrt[3]{2n^3 + 1}}{n}}{\frac{\sqrt{2n^2 - 1}}{n}} = \lim_{n \to +\infty} \frac{\frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{n}}}{\frac{\sqrt{2n^2 - 1}}{\sqrt{n^2}}} = \frac{\sum_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{n^2}}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{$$

$$\frac{\infty}{\infty}$$

$$= \lim_{n \to +\infty} \frac{\sqrt[3]{\frac{2n^3 + 1}{n^3}}}{\sqrt{\frac{2n^2 - 1}{n^2}}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2 + \frac{1}{n^3}}}{\sqrt{2 - \frac{1}{n^2}}} = \frac{\sqrt[3]{2 + 0}}{\sqrt[3]{2 - \frac{1}{n^2}}}$$

$$\frac{c}{n^p}=0, \quad c,p\in\mathbb{R},\ p>0$$

- Najveća potencija u brojniku je $\sqrt[3]{n^3} = n$.
- Najveća potencija u nazivniku je $\sqrt{n^2} = n$.
- Dijelimo brojnik i nazivnik s n.

$$\lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{2n^2 - 1}} \stackrel{\text{further of }}{=} \lim_{n \to +\infty} \frac{\frac{\sqrt[3]{2n^3 + 1}}{n}}{\frac{\sqrt{2n^2 - 1}}{n}} = \lim_{n \to +\infty} \frac{\frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{n^3}}}{\frac{\sqrt{2n^2 - 1}}{\sqrt{n^2}}} = \frac{1}{2}$$

$$= \lim_{n \to +\infty} \frac{\sqrt[3]{\frac{2n^3 + 1}{n^3}}}{\sqrt{\frac{2n^2 - 1}{n^2}}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2 + \frac{1}{n^3}}}{\sqrt{2 - \frac{1}{n^2}}} = \frac{\sqrt[3]{2 + 0}}{\sqrt[3]{2 - 0}}$$

$$\frac{c}{n^p}=0, \quad c,p\in\mathbb{R},\ p>0$$

Rješenje a)

- Najveća potencija u brojniku je $\sqrt[3]{n^3} = n$.
- Najveća potencija u nazivniku je $\sqrt{n^2} = n$.
- Dijelimo brojnik i nazivnik s n.

$$\lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{2n^2 - 1}} = \lim_{n \to +\infty} \frac{\frac{\sqrt[3]{2n^3 + 1}}{n}}{\frac{\sqrt{2n^2 - 1}}{n}} = \lim_{n \to +\infty} \frac{\frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{n}}}{\sqrt[3]{2n^2 - 1}} = \frac{\sum_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{n^2}}}{\sqrt[3]{2n^3 + 1}} = \frac{\sum_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{n^2}}}{\sqrt[3]{2n^3 + 1}} = \frac{\sum_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{n^2}}}{\sqrt[3]{2n^3 + 1}} = \frac{\sum_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{n^2}}}{\sqrt[3]{2n^3 + 1}} = \frac{\sum_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{n^2}}}{\sqrt[3]{2n^3 + 1}} = \frac{\sum_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{n^2}}}{\sqrt[3]{2n^3 + 1}} = \frac{\sum_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{n^2}}}{\sqrt[3]{2n^3 + 1}} = \frac{\sum_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{n^2}}}{\sqrt[3]{2n^3 + 1}} = \frac{\sum_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{n^2}}}{\sqrt[3]{2n^3 + 1}} = \frac{\sum_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{n^2}}}{\sqrt[3]{2n^3 + 1}} = \frac{\sum_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{n^2}}}{\sqrt[3]{2n^3 + 1}} = \frac{\sum_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{n^2}}}{\sqrt[3]{2n^3 + 1}} = \frac{\sum_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}}}{\sqrt[3]{2n^3 + 1}} = \frac{\sum_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}}}{\sqrt[3]{2n^3 + 1}} = \frac{\sum_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}}}{\sqrt[3]{2n^3 + 1}} = \frac{\sum_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}}}{\sqrt[3]{2n^3 + 1}} = \frac{\sum_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}}}{\sqrt[3]{2n^3 + 1}} = \frac{\sum_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}}}{\sqrt[3]{2n^3 + 1}} = \frac{\sum_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}}}$$

$$= \lim_{n \to +\infty} \frac{\sqrt[3]{\frac{2n^3 + 1}{n^3}}}{\sqrt{\frac{2n^2 - 1}{n^3}}}$$

$$= \frac{c}{\lim_{n \to +\infty} \frac{c}{n^p}} = 0, \quad c, p \in \mathbb{R}, p > 0$$

Riešenje

- Najveća potencija u brojniku je $\sqrt[3]{n^3} = n$.
- Najveća potencija u nazivniku je $\sqrt{n^2} = n$.
- Dijelimo brojnik i nazivnik s n.

$$\lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{2n^2 - 1}} = \lim_{n \to +\infty} \frac{\frac{\sqrt[3]{2n^3 + 1}}{n}}{\frac{\sqrt{2n^2 - 1}}{n}} = \lim_{n \to +\infty} \frac{\frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{n^3}}}{\frac{\sqrt{2n^2 - 1}}{\sqrt{n^2}}}$$

$$\sqrt[3]{}$$

$$\lim_{p\to+\infty}\frac{c}{n^p}=0,\quad c,p\in\mathbb{R},\ p>0$$

Rješenje

- Najveća potencija u brojniku je $\sqrt[3]{n^3} = n$.
- Najveća potencija u nazivniku je $\sqrt{n^2} = n$.
- Dijelimo brojnik i nazivnik s n.

$$\lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{2n^2 - 1}} = \lim_{n \to +\infty} \frac{\frac{\sqrt[3]{2n^3 + 1}}{n}}{\frac{\sqrt{2n^2 - 1}}{n}} = \lim_{n \to +\infty} \frac{\frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{n^3}}}{\frac{\sqrt{2n^2 - 1}}{\sqrt{n^2}}}$$

$$\frac{\infty}{n}$$

$$\sqrt[3]{\frac{2n^3 + 1}{n^3}}$$

$$=\frac{\sqrt{100}}{100}$$

$$\lim_{n\to+\infty}\frac{c}{n^p}=0,\quad c,p\in\mathbb{R},\ p>0$$

Riešenje

- Najveća potencija u brojniku je ³√n³ = n.
 Najveća potencija u nazivniku je √n² = n.
- Dijelimo brojnik i nazivnik s n.
- Dijelilio brojilik i nazivilik s i

$$\lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{2n^2 - 1}} = \lim_{n \to +\infty} \frac{\frac{\sqrt[3]{2n^3 + 1}}{n}}{\frac{\sqrt{2n^2 - 1}}{n}} = \lim_{n \to +\infty} \frac{\frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{n^3}}}{\frac{\sqrt{2n^2 - 1}}{\sqrt{n^2}}}$$

$$= \lim_{n \to +\infty} \frac{\sqrt[3]{\frac{2n^3 + 1}{n^3}}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3$$

 $=\frac{\sqrt[3]{2}}{\sqrt{2}}=---\frac{\sqrt[3]{2}}{\lim_{n\to+\infty}\frac{c}{n^p}}=0, \quad c,p\in\mathbb{R},\,p>0$

Riešenje

- Najveća potencija u brojniku je ³√n³ = n.
 Najveća potencija u nazivniku je √n² = n.
- Dijelimo brojnik i nazivnik s n.
- Dijelimo brojnik i nazivnik s r

$$\lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{2n^2 - 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\frac{\sqrt{n}}{\sqrt{2n^2 - 1}}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}}$$

$$\frac{\infty}{\sqrt[3]{2n^3 + 1}}$$

$$\sqrt[3]{\frac{2n^3 + 1}{n}}$$

$$\sqrt[3]{\frac{2n^3 + 1}{n}}$$

$$\sqrt[3]{\frac{2n^3 + 1}{n}}$$

$$\sqrt[3]{\frac{2n^3 + 1}{n}}$$

$$=\frac{\sqrt[3]{2}}{\sqrt{2}}=\frac{\sqrt[6]{2^2}}{\sqrt{2}}$$

$$\lim_{n \to \infty} \frac{c}{n^p}=0, \quad c, p \in \mathbb{R}, p > 0$$

Riešenje

- Najveća potencija u brojniku je $\sqrt[3]{n^3} = n$. • Najveća potencija u nazivniku je $\sqrt{n^2} = n$.
- Dijelimo brojnik i nazivnik s n.

$$\lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{2n^2 - 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\frac{n}{\sqrt{2n^2 - 1}}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{2n^3 + 1}}$$

$$\frac{3+1}{n}$$

$$\lim_{n\to+\infty} \frac{1}{n}$$

$$\frac{\sqrt{2n^2-1}}{\sqrt{n^2}}$$

$$= \lim_{n \to \infty} \frac{\sqrt[3]{2n^3 + n^3}}{\sqrt[3]{n^3 + n^3}}$$

$$= \lim_{n \to +\infty} \frac{\sqrt[3]{\frac{2n^3 + 1}{n^3}}}{\sqrt{2n^2 - 1}}$$

$$\infty \frac{V}{\sqrt{2}}$$

$$\frac{1}{1-\frac{1}{n^2}} = \frac{1}{\sqrt{2-n^2}}$$

$$=\frac{\sqrt[3]{2}}{\sqrt{2}}=\frac{\sqrt[6]{2^2}}{\sqrt[6]{2^3}}$$

$$\lim_{\substack{n \to +\infty \\ n \neq \infty}} \frac{c}{n^p} = 0, \quad c, p \in \mathbb{R}, p > 0$$

- Najveća potencija u brojniku je $\sqrt[3]{n^3} = n$. • Najveća potencija u nazivniku je $\sqrt{n^2} = n$.
- Dijelimo brojnik i nazivnik s n.

$$\lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{2n^2 - 1}} = \lim_{n \to +\infty} \frac{\frac{\sqrt[3]{2n^3 + 1}}{n}}{\frac{\sqrt{2n^2 - 1}}{n}} = \lim_{n \to +\infty} \frac{\frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{n}}}{\frac{\sqrt{2n^2 - 1}}{\sqrt{n^2}}}$$



Riešenje

$$= \lim_{n \to +\infty} \frac{\sqrt[3]{\frac{2n^3 + n^3}{n^3}}}{\sqrt{2n^2 - n^3}}$$

$$\sqrt{\frac{2n-1}{n^2}}$$

$$= \frac{\sqrt[3]{2}}{\sqrt{2}} = \sqrt[6]{2^2} = \sqrt[6]{\frac{2^2}{2^3}}$$

$$\lim_{n \to +\infty} \frac{c}{n^p} = 0, \quad c, p \in \mathbb{R}, p > 0$$

Riešenje

- Najveća potencija u brojniku je $\sqrt[3]{n^3} = n$. • Najveća potencija u nazivniku je $\sqrt{n^2} = n$.
- Dijelimo brojnik i nazivnik s n.

$$\lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{2n^2 - 1}} = \lim_{n \to +\infty} \frac{\frac{\sqrt[3]{2n^3 + 1}}{n}}{\frac{\sqrt{2n^2 - 1}}{n}} = \lim_{n \to +\infty} \frac{\frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{n}}}{\frac{\sqrt{2n^2 - 1}}{\sqrt{n}}}$$

 $= \lim_{n \to +\infty} \frac{\sqrt[3]{\frac{2n^3 + 1}{n^3}}}{\sqrt[4]{\frac{2n^2 - 1}{n^2}}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2 + \frac{1}{n^3}}}{\sqrt{2 - \frac{1}{n^2}}} = \frac{\sqrt[3]{2 + 0}}{\sqrt[4]{2 - 0}}$

$$= \lim_{n \to +\infty} \frac{V}{\sqrt{}}$$

$$\sqrt{\frac{2n-1}{n^2}}$$

$$\sqrt[3]{2} \qquad \sqrt[6]{2^2} \qquad \sqrt{2^2} \qquad \sqrt{2^2}$$

 $=\frac{\sqrt[3]{2}}{\sqrt{2}}=\frac{\sqrt[6]{2^2}}{\sqrt[6]{2^3}}=\sqrt[6]{\frac{2^2}{2^3}}=\sqrt[6]{\frac{1}{2}}$

$$= \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt[3]{n^3}} =$$

$$\sqrt{n^2}$$

 $\sqrt[n-k]{a^{m\cdot k}} = \sqrt[n]{a^m}$

$$\frac{2+0}{2} =$$

$$\frac{c}{c^{p}} = 0, \quad c, p \in \mathbb{R}, p > 0$$

23 / 43

Riešenje

- Najveća potencija u brojniku je $\sqrt[3]{n^3} = n$. • Najveća potencija u nazivniku je $\sqrt{n^2} = n$.
- Dijelimo brojnik i nazivnik s n.

$$\lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\sqrt{2n^2 - 1}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\frac{\sqrt{2n^2 - 1}}{\sqrt{2n^2 - 1}}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2n^3 + 1}}{\frac{\sqrt[3]{n^3}}{\sqrt{2n^2 - 1}}}$$

$$\frac{3+1}{n}$$

$$= \lim_{n \to +\infty} \frac{\sqrt[3]{\frac{2n^3 + 1}{n^3}}}{\sqrt[3]{\frac{2n^2 - 1}{n^2}}} = \lim_{n \to +\infty} \frac{\sqrt[3]{2 + \frac{1}{n^3}}}{\sqrt{2 - \frac{1}{n^2}}} = \frac{\sqrt[3]{2 + 0}}{\sqrt[3]{2 - 0}}$$

$$= \lim_{n \to \infty} \frac{\sqrt[3]{\frac{2n^3 + 1}{n^3}}}{\sqrt[3]{\frac{2n^3 + 1}{n^3}}}$$

$$\sqrt{\frac{2n^2 - 1}{n^2}} \qquad \sqrt{2 - \frac{1}{n^2}} \qquad \sqrt{2 - 0}$$

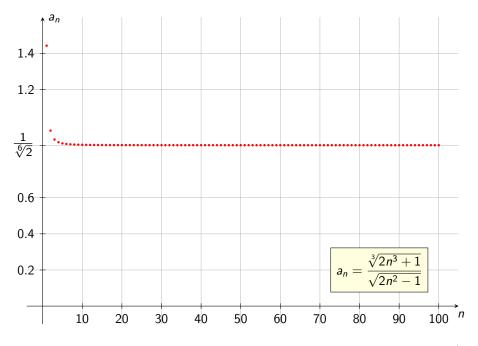
$$= \frac{\sqrt[3]{2}}{\sqrt{2}} = \frac{\sqrt[6]{2^2}}{\sqrt[6]{2^3}} = \sqrt[6]{\frac{2^2}{2^3}} = \sqrt[6]{\frac{1}{2}} = \frac{1}{\sqrt[6]{2}} \qquad \lim_{n \to +\infty} \frac{c}{n^p} = 0, \quad c, p \in \mathbb{R}, p > 0$$

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

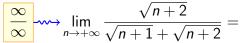
 $\sqrt[n-k]{a^{m\cdot k}} = \sqrt[n]{a^m}$

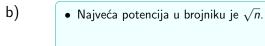
$$\frac{2+0}{2-0} =$$

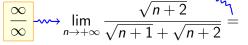
23 / 43



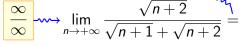
$$\lim_{n\to+\infty}\frac{\sqrt{n+2}}{\sqrt{n+1}+\sqrt{n+2}}=$$



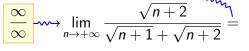




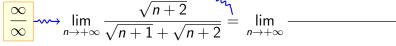
- Najveća potencija u brojniku je \sqrt{n} . • Najveća potencija u nazivniku je \sqrt{n} .



- Najveća potencija u brojniku je √n.
 Najveća potencija u nazivniku je √n.
 - Prince de la companya de la companya
 - Dijelimo brojnik i nazivnik s \sqrt{n} .

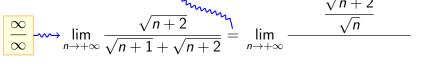


- Najveća potencija u brojniku je √n.
 Najveća potencija u nazivniku je √n.
- Najveća potencija u nazivniku je \sqrt{n} .
- Dijelimo brojnik i nazivnik s \sqrt{n} .

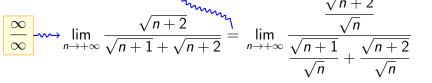




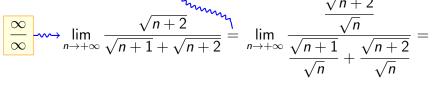
- Najveća potencija u brojniku je √n.
 Najveća potencija u nazivniku je √n.
- Najveća potencija u nazivinku je \sqrt{n} .
- Dijelimo brojnik i nazivnik s \sqrt{n} .



- Najveća potencija u brojniku je √n.
 Najveća potencija u nazivniku je √n.
- Najveća potencija u nazivniku je \sqrt{n}
- Dijelimo brojnik i nazivnik s \sqrt{n} .



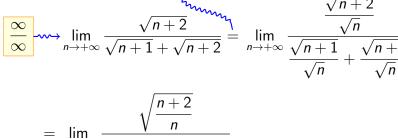
- Najveća potencija u brojniku je √n.
 Najveća potencija u nazivniku je √n.
- Najveća potencija u nazivniku je \sqrt{n}
- Dijelimo brojnik i nazivnik s \sqrt{n} .



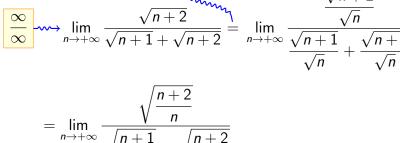
$$=\lim_{n\to+\infty}$$

- Najveća potencija u brojniku je √n.
 Najveća potencija u nazivniku je √n.
- Division of the second of the
- Dijelimo brojnik i nazivnik s \sqrt{n} .

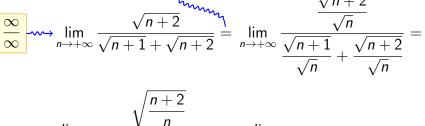
 $n\rightarrow +\infty$



- Najveća potencija u brojniku je √n.
 Najveća potencija u nazivniku je √n.
 - Najveca potencija u nazivinku je v n
- Dijelimo brojnik i nazivnik s \sqrt{n} .

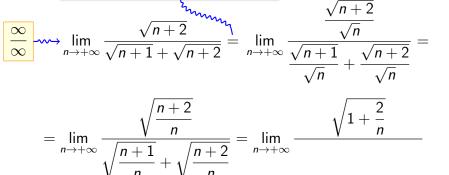


- Najveća potencija u brojniku je √n.
 Najveća potencija u nazivniku je √n.
- Najveća potencija u nazivniku je \sqrt{n}
- Dijelimo brojnik i nazivnik s \sqrt{n} .



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

- Najveća potencija u brojniku je √n.
 Najveća potencija u nazivniku je √n.
- Najveća potencija u nazivniku je \sqrt{n}
- Dijelimo brojnik i nazivnik s \sqrt{n} .

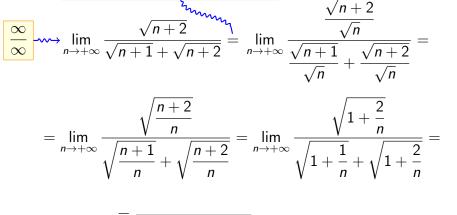


- Najveća potencija u brojniku je √n.
 Najveća potencija u nazivniku je √n.
- Najveća potencija u nazivniku je \sqrt{n}
- Dijelimo brojnik i nazivnik s \sqrt{n} .

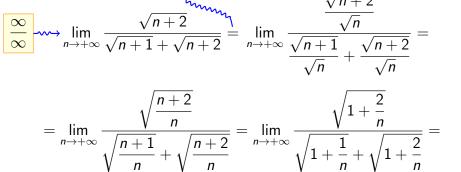
$$\lim_{n \to +\infty} \frac{\sqrt{n+2}}{\sqrt{n+1} + \sqrt{n+2}} = \lim_{n \to +\infty} \frac{\frac{\sqrt{n+2}}{\sqrt{n}}}{\frac{\sqrt{n+1}}{\sqrt{n}} + \frac{\sqrt{n+2}}{\sqrt{n}}} =$$

$$= \lim_{n \to +\infty} \frac{\sqrt{\frac{n+2}{n}}}{\sqrt{\frac{n+1}{n}} + \sqrt{\frac{n+2}{n}}} = \lim_{n \to +\infty} \frac{\sqrt{1+\frac{2}{n}}}{\sqrt{1+\frac{1}{n}} + \sqrt{1+\frac{2}{n}}}$$

- Najveća potencija u brojniku je √n.
 Najveća potencija u nazivniku je √n.
- Najveca potencija u nazivniku je v n.
- Dijelimo brojnik i nazivnik s \sqrt{n} .



- Najveća potencija u brojniku je √n.
 Najveća potencija u nazivniku je √n.
- Dijelimo brojnik i nazivnik s \sqrt{n} .



• Dijelimo brojnik i nazivnik s \sqrt{n} .

$$\infty$$
 lim $\sqrt{n+2}$

$$\frac{\infty}{\infty} \longrightarrow \lim_{n \to +\infty} \frac{\sqrt{n+2}}{\sqrt{n+1} + \sqrt{n+2}} = \lim_{n \to +\infty} \frac{\frac{1}{\sqrt{n+1}}}{\frac{\sqrt{n}}{\sqrt{n}}}$$

$$\stackrel{n \to +\infty}{\sim} \sqrt{n+1} + \sqrt{n+2}$$

$$\sqrt{\frac{n+2}{n}}$$

$$= \lim_{n \to +\infty} \frac{\sqrt{\frac{n+2}{n}}}{\sqrt{n+1}}$$

$$= \lim_{n \to +\infty} \frac{\sqrt{\frac{n+2}{n}}}{\sqrt{\frac{n+1}{n}} + \sqrt{\frac{n+2}{n}}} = \lim_{n \to +\infty} \frac{\sqrt{1+\frac{2}{n}}}{\sqrt{1+\frac{1}{n}} + \sqrt{1+\frac{2}{n}}} =$$

$$=\frac{\sqrt{1+0}}{\lim_{n \to \infty} \frac{c}{np} = 0, \quad c, p \in \mathbb{R}, p > 0}$$

• Dijelimo brojnik i nazivnik s \sqrt{n} .

$$\frac{\infty}{\infty} \longrightarrow \lim_{n \to +\infty} \frac{\sqrt{n+2}}{\sqrt{n+1} + \sqrt{n+2}} = \lim_{n \to +\infty} \frac{\frac{\sqrt{n+2}}{\sqrt{n}}}{\frac{\sqrt{n+1}}{\sqrt{n+1}} + \frac{\sqrt{n+2}}{\sqrt{n+2}}}$$

$$\underset{n \to +\infty}{\longrightarrow} \lim \frac{\sqrt{n+2}}{\sqrt{n+1} + \sqrt{n+2}} =$$

$$= \lim_{n \to +\infty} \frac{\sqrt{\frac{n+2}{n}}}{\sqrt{\frac{n+1}{n}} + \sqrt{\frac{n+2}{n}}} = \lim_{n \to +\infty} \frac{\sqrt{1+\frac{2}{n}}}{\sqrt{1+\frac{1}{n}} + \sqrt{1+\frac{2}{n}}} =$$

$$= \frac{\sqrt{1+0}}{\sqrt{1+0}+\sqrt{1+0}}$$

$$\lim_{n \to \infty} \frac{c}{n^p} = 0, \quad c, p \in \mathbb{R}, p > 0$$

• Najveća potencija u nazivniku je
$$\sqrt{n}$$
.

• Dijelimo brojnik i nazivnik s \sqrt{n} .

• Najveća potencija u brojniku je \sqrt{n} .

$$\frac{\infty}{\infty} \longrightarrow \lim_{n \to +\infty} \frac{\sqrt{n+2}}{\sqrt{n+1} + \sqrt{n+2}} = \lim_{n \to +\infty} \frac{\frac{\sqrt{n+2}}{\sqrt{n}}}{\frac{\sqrt{n+1}}{\sqrt{n+1}} + \frac{\sqrt{n+2}}{\sqrt{n+2}}}$$

$$\lim_{n \to +\infty} \frac{\sqrt{n+2}}{\sqrt{n+1} + \sqrt{n+2}} =$$

$$\sqrt{n+2}$$

$$\sqrt{\frac{n+2}{n}}$$

$$= \lim_{n \to \infty} \frac{\sqrt{\frac{n+2}{n}}}{n}$$

$$= \lim_{n \to +\infty} \frac{\sqrt{\frac{n+2}{n}}}{\sqrt{\frac{n+1}{n}} + \sqrt{\frac{n+2}{n}}} = \lim_{n \to +\infty} \frac{\sqrt{1+\frac{2}{n}}}{\sqrt{1+\frac{1}{n}} + \sqrt{1+\frac{2}{n}}} =$$

$$\lim_{\substack{c \in \mathbb{R}, \ p > 0}} \frac{c}{\sqrt{1+0} + \sqrt{1+0}}$$

$$\sqrt{n}$$

• Najveća potencija u nazivniku je
$$\sqrt{n}$$
.

• Dijelimo brojnik i nazivnik s
$$\sqrt{n}$$
.

• Najveća potencija u brojniku je \sqrt{n} .

$$\frac{\infty}{\infty} \longrightarrow \lim_{n \to +\infty} \frac{\sqrt{n+2}}{\sqrt{n+1} + \sqrt{n+2}} = \lim_{n \to +\infty} \frac{\frac{\sqrt{n+2}}{\sqrt{n}}}{\frac{\sqrt{n+1}}{\sqrt{n}} + \frac{\sqrt{n+2}}{\sqrt{n}}}$$

$$\sqrt{n+2}$$

$$\sqrt{\frac{n+2}{n}}$$

$$\sqrt{\frac{n+2}{n}}$$

$$\lim_{n \to +\infty} \frac{\sqrt{\frac{n+2}{n}}}{\sqrt{n+1}}$$

$$=\lim_{n\to+\infty}\frac{\sqrt{\frac{n+2}{n}}}{\sqrt{\frac{n+1}{n}}+\sqrt{\frac{n+2}{n}}}=\lim_{n\to+\infty}\frac{\sqrt{1+\frac{2}{n}}}{\sqrt{1+\frac{1}{n}}+\sqrt{1+\frac{2}{n}}}=$$

$$+\sqrt{\frac{n+2}{n}}$$

$$\sqrt{1+0}$$

$$\lim_{r \to \infty} \frac{c}{r^p} = 0, \quad c, p \in \mathbb{R}, p > 0$$

$$+\sqrt{1+\frac{1}{n}}$$

• Najveća potencija u nazivniku je
$$\sqrt{n}$$
.

• Dijelimo brojnik i nazivnik s
$$\sqrt{n}$$
.

• Najveća potencija u brojniku je \sqrt{n} .

$$\frac{\infty}{\infty} \longrightarrow \lim_{n \to +\infty} \frac{\sqrt{n+2}}{\sqrt{n+1} + \sqrt{n+2}} = \lim_{n \to +\infty} \frac{\frac{\sqrt{n+2}}{\sqrt{n}}}{\frac{\sqrt{n+1}}{\sqrt{n+1}} + \frac{\sqrt{n+2}}{\sqrt{n+2}}}$$

$$=\lim_{n\to+\infty}\frac{\sqrt{\frac{n+2}{n}}}{\sqrt{\frac{n+1}{n}}+\sqrt{\frac{n+2}{n}}}=\lim_{n\to+\infty}\frac{\sqrt{1+\frac{2}{n}}}{\sqrt{1+\frac{1}{n}}+\sqrt{1+\frac{2}{n}}}=$$

$$\sqrt{1+0}$$

 $\frac{c}{c} = 0, \quad c, p \in \mathbb{R}, p > 0$

• Najveća potencija u nazivniku je
$$\sqrt{n}$$
.

• Dijelimo brojnik i nazivnik s
$$\sqrt{n}$$
.

• Najveća potencija u brojniku je \sqrt{n} .

$$\frac{\infty}{\infty} \longrightarrow \lim_{n \to +\infty} \frac{\sqrt{n+2}}{\sqrt{n+1} + \sqrt{n+2}} = \lim_{n \to +\infty} \frac{\frac{\sqrt{n+2}}{\sqrt{n}}}{\frac{\sqrt{n+1}}{\sqrt{n+1}} + \frac{\sqrt{n+2}}{\sqrt{n+2}}}$$

$$\stackrel{\sim}{n \to +\infty} \sqrt{n+1} + \sqrt{n+2}$$

$$\sqrt{n+2}$$

$$= \lim_{n \to +\infty} \frac{\sqrt{\frac{n+2}{n}}}{\sqrt{n+1}} \sqrt{n}$$

$$= \lim_{n \to +\infty} \frac{\sqrt{\frac{n+2}{n}}}{\sqrt{\frac{n+1}{n}} + \sqrt{\frac{n+2}{n}}} = \lim_{n \to +\infty} \frac{\sqrt{1+\frac{2}{n}}}{\sqrt{1+\frac{1}{n}} + \sqrt{1+\frac{2}{n}}} =$$

$$\lim_{n\to+\infty}\frac{\sqrt{n}}{\sqrt{n+1}}+\sqrt{n+2}$$

$$\sqrt{\frac{n}{n}} + \sqrt{\frac{n}{n}}$$

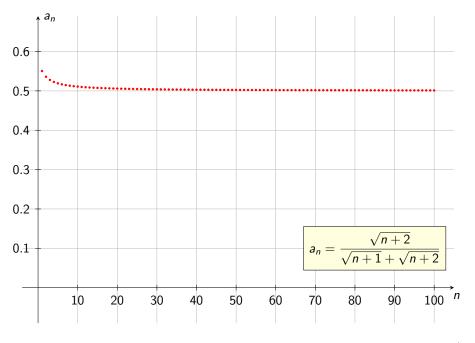
$$= \frac{\sqrt{1+0}}{\sqrt{1+0} + \sqrt{1+0}} = \frac{\sqrt{1}}{\sqrt{1} + \sqrt{1}} = \frac{1}{2}$$

$$\frac{c}{\sqrt{1+0}} = 0, \quad c, p \in \mathbb{R}, p > 0$$

$$\sqrt{1+\frac{2}{n}}$$

$$\frac{\sqrt{1+\frac{1}{n}}}{\frac{1}{n}} + \sqrt{1+\frac{2}{n}} =$$

$$=\frac{1}{2}$$



c)

$$\lim_{n\to+\infty}\frac{\sqrt{3n^3-2n}+n}{n^2+n}=$$

c)

$$\frac{\infty}{\infty} \longrightarrow \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n} + n}{n^2 + n} =$$

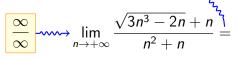
• Najveća potencija u brojniku je
$$\sqrt{n^3} = n^{\frac{3}{2}}$$
.

$$\lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n + n}}{n^2 + n} =$$

-)
- Najveća potencija u brojniku je $\sqrt{n^3} = n^{\frac{3}{2}}$.
- Najveća potencija u nazivniku je n^2 .

 $\frac{\infty}{\infty} \longrightarrow \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n} - n}{n^2 + n}$

- Najveća potencija u brojniku je $\sqrt{n^3} = n^{\frac{3}{2}}$.
- Najveća potencija u nazivniku je n^2 .
- Dijelimo brojnik i nazivnik s n^2 .



- Najveća potencija u brojniku je $\sqrt{n^3}=n^{\frac{3}{2}}.$
- Najveća potencija u nazivniku je n^2 .
- Dijelimo brojnik i nazivnik s n^2 .

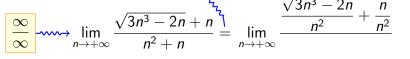
$$\frac{\infty}{\infty}$$

$$\frac{\infty}{\infty}$$
 \longrightarrow $n-$

$$\lim_{n\to+\infty} \frac{\sqrt{3n^3-2n+n}}{n^2+n}$$

$$0 \to +\infty$$

- Najveća potencija u brojniku je $\sqrt{n^3} = n^{\frac{3}{2}}$. • Najveća potencija u nazivniku je n^2 .
- Dijelimo brojnik i nazivnik s n^2 .



- Najveća potencija u brojniku je $\sqrt{n^3} = n^{\frac{3}{2}}$.
- Najveća potencija u nazivniku je n^2 .
- Dijelimo brojnik i nazivnik s n^2 .



$$\lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n} + n}{n^2 + n}$$

$$\int_{-\infty}^{\infty} \frac{\frac{\sqrt{3n^3 - 2n}}{n^2} + \frac{n}{n^2}}{\frac{n^2}{n^2} + \frac{n}{n^2}}$$

- Najveća potencija u brojniku je $\sqrt{n^3} = n^{\frac{3}{2}}$.
- Najveća potencija u nazivniku je n^2 .
- Dijelimo brojnik i nazivnik s n^2 .



$$\lim_{n\to+\infty}\frac{\sqrt{3n^3-2n}+n}{n^2+n}$$

$$\lim_{n\to+\infty}$$

$$\int_{-\infty}^{\infty} \frac{\frac{\sqrt{3n^2 + \frac{n}{n^2}}}{n^2} + \frac{n}{n^2}}{\frac{n^2}{n^2} + \frac{n}{n^2}}$$

$$=\lim_{n o +\infty} \overline{}$$

- Najveća potencija u brojniku je $\sqrt{n^3} = n^{\frac{3}{2}}$.
- Najveća potencija u nazivniku je n^2 .
- Dijelimo brojnik i nazivnik s n^2 .

$$\frac{\infty}{\infty}$$

$$\stackrel{\longleftarrow}{\longrightarrow} \lim_{n \to +}$$

$$\int_{0}^{\infty} \frac{\sqrt{3n^3-2n}+n}{n^2+n}$$

$$\lim_{n\to+\infty}$$

$$0 = \frac{\sqrt{3n^3 - 2n} + \frac{n}{n^2}}{\frac{n^2}{2} + \frac{n}{2}} = 0$$

$$n^{2} = \sqrt{n^{4}}$$

$$= \lim_{n \to +\infty} \frac{\sqrt{\frac{3n^{3} - 2n}{n^{4}}} + \frac{3n^{4}}{n^{4}}}{n^{4}}$$

- Najveća potencija u brojniku je $\sqrt{n^3} = n^{\frac{3}{2}}$.
- Najveća potencija u nazivniku je n^2 .
- Dijelimo brojnik i nazivnik s n^2 .

$$\frac{\infty}{\infty}$$
 \longrightarrow $n-$

$$\lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n} + n}{n^2 + n}$$

$$\lim_{n \to +\infty} \frac{\sqrt{3n^2 - 2n} + \frac{n}{n^2}}{\frac{n^2}{n^2} + \frac{n}{n^2}} =$$

$$= \lim_{n \to +\infty} \frac{\sqrt{\frac{3n^3 - 2n}{n^4} + \frac{1}{n}}}{1 + \frac{1}{n}}$$

- Najveća potencija u brojniku je $\sqrt{n^3} = n^{\frac{3}{2}}$.
- Najveća potencija u nazivniku je n^2 .
- Dijelimo brojnik i nazivnik s n^2 .

$$\frac{\infty}{\infty}$$

$$\rightarrow \lim_{n \to +}$$

$$\lim_{n\to+\infty}\frac{\sqrt{3n}}{n}$$

$$\frac{\overline{-2n}+n}{2+n}$$

$$\lim_{n\to+\infty}$$

$$\int_{-\infty}^{\infty} \frac{\sqrt{3n^2 - 2n} + \frac{n}{n^2}}{n^2 - n}$$

$$= \sqrt{n^4}$$
 $= \lim$

$$\lim_{n\to+\infty}\frac{\sqrt{\frac{3n^3-2n}{n^4}+1}}{1}$$

$$\lim_{n\to+\infty}$$

- Najveća potencija u brojniku je $\sqrt{n^3} = n^{\frac{3}{2}}$.
- Najveća potencija u nazivniku je n^2 .
- Dijelimo brojnik i nazivnik s n^2 .

$$\frac{\infty}{\infty}$$

$$\stackrel{\longleftarrow}{\longrightarrow}$$
 lir

$$\sim \frac{\sqrt{3n^3 - 2n} + n}{n^2 + n}$$

$$\lim_{n \to +\infty}$$

$$\frac{3n^{2}-2n}{\frac{n^{2}}{n^{2}}+\frac{n}{n^{2}}}=$$

$$n^2 = \sqrt{n^4}$$

$$= \lim_{n \to +\infty}$$

$$\lim_{n\to+\infty} \frac{\sqrt{\frac{3n^3-2n}{n^4}+1}}{1+1}$$

$$\lim_{n\to+\infty}$$

$$\sqrt{\frac{3}{n}-\frac{2}{n^3}}+\frac{1}{n}$$

- Najveća potencija u brojniku je $\sqrt{n^3} = n^{\frac{3}{2}}$.
- Najveća potencija u nazivniku je n^2 .
- Dijelimo brojnik i nazivnik s n^2 .

$$\frac{\infty}{\infty}$$

$$\longrightarrow \lim_{n \to +\infty}$$

$$\sqrt{3n^3-2n}+n$$

$$\lim_{n\to+\infty}$$

$$\frac{\frac{3n^3 - 2n}{n^2} + \frac{n}{n^2}}{\frac{n^2}{n^2} + \frac{n}{n}} =$$

$$n^2 = \sqrt{n^4}$$
$$= \lim_{n \to +\infty}$$

$$\lim_{n \to +\infty} \frac{\sqrt{\frac{3n^3 - 2n}{n^4}} + \frac{1}{n^4}}{1}$$

$$\lim_{n \to +\infty} \frac{\sqrt{\frac{3}{n} - \frac{2}{n^3}} + }{1 + \frac{1}{n}}$$

- Najveća potencija u brojniku je $\sqrt{n^3} = n^{\frac{3}{2}}$.
- Najveća potencija u nazivniku je n^2 .
- Dijelimo brojnik i nazivnik s n^2 .



$$\longrightarrow \prod_{n\to \infty}$$

$$\lim_{n\to+\infty}\frac{\sqrt{3}}{n}$$

$$\sqrt{3n^3 - 2n + n} = \frac{\sqrt{3n^3 - 2n + n}}{n^2 + n}$$

$$\lim_{n\to+\infty}$$

$$\frac{3n^3-2n}{n^2}$$

$$= \sqrt{n^4} \qquad \sqrt{\frac{3n^3 - 2n}{n^4}}$$

$$\frac{\sqrt{\frac{3n^4-2n}{n^4}+\frac{1}{r}}}{1}$$

$$\lim_{n \to +\infty} -$$

$$\frac{3}{n}-\frac{2}{n^3}+\frac{1}{n}$$

- Najveća potencija u brojniku je $\sqrt{n^3} = n^{\frac{3}{2}}$.
 - Najveća potencija u nazivniku je n^2 .
 - Dijelimo brojnik i nazivnik s n^2 .

$$\lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n} + n}{n^2 + n} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\frac{\sqrt{3n^3 - 2n}}{n^2} + \frac{n}{n^2}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2}$$

$$n^{2} = \sqrt{n^{4}}$$

$$= \lim_{n \to +\infty} \frac{\sqrt{\frac{3n^{3} - 2n}{n^{4}} + \frac{1}{n}}}{1 + \frac{1}{n}} = \lim_{n \to +\infty} \frac{\sqrt{\frac{3}{n} - \frac{2}{n^{3}} + \frac{1}{n}}}{1 + \frac{1}{n}} =$$

$$\lim_{n\to+\infty}\frac{c}{n^p}=0,\quad c,p\in\mathbb{R},\,p>0$$

- Najveća potencija u brojniku je $\sqrt{n^3} = n^{\frac{3}{2}}$.
 - Najveća potencija u nazivniku je n^2 .
 - Dijelimo brojnik i nazivnik s n^2 .

$$\lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n} + n}{n^2 + n} = \lim_{n \to +\infty} \frac{\frac{\sqrt{3n^3 - 2n}}{n^2} + \frac{n}{n^2}}{\frac{n^2}{n^2} + \frac{n}{n^2}} =$$

$$n^{2} = \sqrt{n^{4}}$$

$$= \lim_{n \to +\infty} \frac{\sqrt{\frac{3n^{3} - 2n}{n^{4}}} + \frac{1}{n}}{1 + \frac{1}{n}} = \lim_{n \to +\infty} \frac{\sqrt{1 - n^{4}}}{1 + \frac{1}{n}} = \lim_{n \to +\infty} \frac{\sqrt{1 - n^{4}}}{1 + \frac{1}{n}}$$

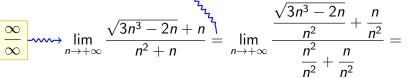
$$= \frac{\sqrt{1 - n^{4}}}{1 + \frac{1}{n}}$$

$$= \frac{\sqrt{1 - n^{4}}}{1 + \frac{1}{n}}$$

$$= \frac{\sqrt{1 - n^{4}}}{1 + \frac{1}{n}}$$

$$p \in \mathbb{R}, p > 0$$

- Najveća potencija u brojniku je \(\sqrt{n^3} = n^{\frac{3}{2}} \).
 Najveća potencija u nazivniku je \(n^2 \).
 - Najveca potencija u nazivinku je i
 - Dijelimo brojnik i nazivnik s n^2 .



$$n^{2} = \sqrt{n^{4}}$$

$$= \lim_{n \to +\infty} \frac{\sqrt{\frac{3n^{3} - 2n}{n^{4}} + \frac{1}{n}}}{1 + \frac{1}{n}} = \lim_{n \to +\infty} \frac{\sqrt{\frac{3}{n} - \frac{2}{n^{3}}}}{1 + \frac{1}{n}}$$

$$= \frac{\sqrt{0-0}+0}{1+0}$$

$$\lim_{n\to+\infty} \frac{c}{n^p} = 0, \quad c, p \in \mathbb{R}, p>0$$

- Najveća potencija u brojniku je $\sqrt{n^3} = n^{\frac{3}{2}}$.
 - Najveća potencija u nazivniku je n^2 .
 - Dijelimo brojnik i nazivnik s n^2 .

$$\lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n} + n}{n^2 + n} = \lim_{n \to +\infty} \frac{\frac{\sqrt{3n^3 - 2n}}{n^2} + \frac{n}{n^2}}{\frac{n^2}{n^2} + \frac{n}{n^2}} =$$

$$n^{2} = \sqrt{n^{4}}$$

$$= \lim_{n \to +\infty} \frac{\sqrt{\frac{3n^{3} - 2n}{n^{4}}} + \frac{1}{n}}{1 + \frac{1}{n}} = \lim_{n \to +\infty} \frac{\sqrt{\frac{3}{n} - \frac{2}{n^{3}}}}{1 + \frac{1}{n}}$$

$$= \frac{\sqrt{0 - 0} + 0}{1 + 0} = \frac{0}{1}$$

$$\lim_{n \to +\infty} \frac{c}{n^{p}} = 0, \quad c, p \in \mathbb{R}, p > 0$$

$$\lim_{n\to+\infty}\frac{c}{n^p}=0,\quad c,p\in\mathbb{R},\,p>0$$

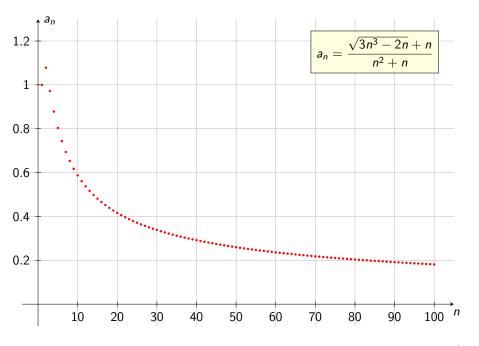
- Najveća potencija u brojniku je $\sqrt{n^3} = n^{\frac{3}{2}}$.
 - Najveća potencija u nazivniku je n^2 .
 - Dijelimo brojnik i nazivnik s n^2 .

$$\lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n} + n}{n^2 + n} = \lim_{n \to +\infty} \frac{\sqrt{3n^3 - 2n}}{\frac{n^2}{n^2} + \frac{n}{n^2}} =$$

$$n^{2} = \sqrt{n^{4}}$$

$$= \lim_{n \to +\infty} \frac{\sqrt{\frac{3n^{3} - 2n}{n^{4}} + \frac{1}{n}}}{1 + \frac{1}{n}} = \lim_{n \to +\infty} \frac{\sqrt{\frac{3}{n} - \frac{2}{n^{3}} + \frac{1}{n}}}{1 + \frac{1}{n}} = \lim_{n \to +\infty} \frac{\sqrt{\frac{3}{n} - \frac{2}{n^{3}} + \frac{1}{n}}}{1 + \frac{1}{n}} = \lim_{n \to +\infty} \frac{c}{n^{p}} = 0, \quad c, p \in \mathbb{R}, p > 0$$

$$\lim_{n \to +\infty} \frac{c}{n^p} = 0, \quad c, p \in \mathbb{R}, p > 0$$



četvrti zadatak

Zadatak 4

Izračunajte sljedeće limese:

a)
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right)$$

b)
$$\lim_{n\to+\infty} \left(\sqrt{6n-5}-\sqrt{n+2}\right)$$

c)
$$\lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^{n+1} + 6 \cdot 5^{n-1}}$$

Rješenje
$$\lim_{n\to+\infty} \left(\sqrt{n^2+5n+1}-\sqrt{n^2-n}\right) =$$

Rješenje
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = \infty - \infty$$

$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = \infty - \infty$$

• $n^2 - n$ je izraz oblika $\infty - \infty$ za veliki $n \in \mathbb{N}$.

$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = \infty - \infty$$

- $n^2 n$ je izraz oblika $\infty \infty$ za veliki $n \in \mathbb{N}$.
- Međutim, znamo da kvadratna funkcija puno brže raste od linearne funkcije.

$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = \infty - \infty$$

- $n^2 n$ je izraz oblika $\infty \infty$ za veliki $n \in \mathbb{N}$.
- Međutim, znamo da kvadratna funkcija puno brže raste od linearne funkcije.
- Stoga je $\sqrt{n^2 n}$ jako veliki broj kada je $n \in \mathbb{N}$ jako veliki broj.

Rješenje
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = \infty - \infty$$

$$a^2 - b^2 = (a - b)(a + b)$$

Rješenje
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = \infty - \infty$$

$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right)$$

$$a^2 - b^2 = (a - b)(a + b)$$

Rješenje
a)
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right)^{n} = \infty - \infty$$

$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) \cdot$$

$$a^2 - b^2 = (a - b)(a + b)$$

$$a^{2} - b^{2} = (a - b)(a + b)$$

Rješenje
a)
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = \infty - \infty$$

$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) \cdot \frac{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}{a^2 - b^2 = (a - b)(a + b)}$$

Rješenje
a)
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = \frac{\infty - \infty}{n}$$

$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) \cdot \frac{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}$$

$$a^2 - b^2 = (a - b)(a + b)$$

Rješenje
a)
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = \frac{\infty - \infty}{\infty - \infty}$$

$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) \cdot \frac{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} = \frac{1}{1 + 1 + 1}$$

$$\frac{a^2 - b^2 = (a - b)(a + b)}{\sum_{n \to +\infty} - \cdots} = \lim_{n \to +\infty} - \cdots$$

Rješenje
a)
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = \frac{\infty - \infty}{\infty - \infty}$$

$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) \cdot \frac{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}{\infty - \infty} = \frac{1}{1 + \infty}$$

$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) \cdot \frac{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} =$$

$$\boxed{\frac{a^2 - b^2 = (a - b)(a + b)}{n \to +\infty}} = \lim_{n \to +\infty} \frac{1}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}$$

Rješenje
a)
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = \frac{\infty - \infty}{\infty - \infty}$$

$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) \cdot \frac{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} = \frac{1}{2}$$

$$\frac{a^2 - b^2 = (a - b)(a + b)}{a^2 + 5n + 1 + \sqrt{n^2 - n}} = \lim_{n \to +\infty} \frac{(n^2 + 5n + 1)}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}$$

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

Rješenje
a)
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = \frac{\infty - \infty}{\infty - \infty}$$

$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) \cdot \frac{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} = \frac{1}{2}$$

$$\frac{a^2 - b^2 = (a - b)(a + b)}{\sum_{n \to +\infty} \frac{(n^2 + 5n + 1) - \sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}$$

Rješenje
a)
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = \frac{\infty - \infty}{\infty - \infty}$$

$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) \cdot \frac{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} = \frac{1}{2}$$

$$\frac{a^2 - b^2 = (a - b)(a + b)}{n \to +\infty} = \lim_{n \to +\infty} \frac{(n^2 + 5n + 1) - (n^2 - n)}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}$$

Rješenje
a)
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = \infty - \infty$$

$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) \cdot \frac{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} =$$

$$\frac{a^2 - b^2 = (a - b)(a + b)}{n \to +\infty} = \lim_{n \to +\infty} \frac{(n^2 + 5n + 1) - (n^2 - n)}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} =$$

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

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

Rješenje
a)
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = \infty - \infty$$

$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) \cdot \frac{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} =$$

$$\frac{a^2 - b^2 = (a - b)(a + b)}{n \to +\infty} = \lim_{n \to +\infty} \frac{(n^2 + 5n + 1) - (n^2 - n)}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} =$$

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

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

Rješenje
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = \frac{\infty - \infty}{n}$$

$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) \cdot \frac{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} = \frac{1}{n}$$

$$\frac{a^2 - b^2 = (a - b)(a + b)}{= \lim_{n \to +\infty} \frac{(n^2 + 5n + 1) - (n^2 - n)}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}} = \lim_{n \to +\infty} \frac{6n + 1}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}$$

Rješenje
a)
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = \infty - \infty$$

$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) \cdot \frac{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} =$$

$$\frac{a^2 - b^2 = (a - b)(a + b)}{\infty} = \lim_{n \to +\infty} \frac{(n^2 + 5n + 1) - (n^2 - n)}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} =$$

$$= \lim_{n \to +\infty} \frac{6n + 1}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}$$

Rješenje
a)
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = \infty - \infty$$

$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) \sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}$$

$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = \infty$$
Najveća potencija u brojniku je n .
$$\frac{a^2 - b^2 = (a - b)(a)}{\infty} = \lim_{n \to +\infty} \frac{6n + 1}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}$$

Rješenje
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = \infty - \infty$$
a)
$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) \sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}$$
• Najveća potencija u brojniku je n .
• Najveća potencija u nazivniku je $\sqrt{n^2} = n$.
$$\frac{a^2 - b^2 = (a - b)(a}{\infty} = \lim_{n \to +\infty} \frac{6n + 1}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} = \lim_{n \to +\infty} \frac{6n + 1}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}$$

Rješenje
a)
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = -\infty - \infty$$

$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) \sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}$$

$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) \sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}$$

$$= -\infty - \infty - \infty$$
Najveća potencija u nazivniku je $\sqrt{n^2 + n} = -\infty$

$$= -\infty - \infty - \infty$$
Dijelimo brojnik i nazivnik s n .
$$= -\infty - \infty - \infty$$

$$= -\infty -$$

Rješenje
a)
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = -\infty$$
a)
$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = -\infty$$

$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n} \right) = -\infty$$
• Najveća potencija u brojniku je n .
• Najveća potencija u nazivniku je $\sqrt{n^2} = n$.
• Dijelimo brojnik i nazivnik s n .
$$= \lim_{n \to +\infty} \frac{6n + 1 / : n}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n} / : n}$$

Rješenje
a)
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = \infty - \infty$$

$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) \cdot \frac{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} = \infty$$

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

$$\frac{\infty}{\infty} = \lim_{n \to +\infty} \frac{6n+1/: n}{\sqrt{n^2+5n+1} + \sqrt{n^2-n}/: n} =$$

$$=\lim_{n\to+\infty}\frac{}{}$$

Rješenje
a)
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = \infty - \infty$$

$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) \cdot \frac{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} = \infty$$

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

$$= \lim_{n \to +\infty} \frac{6n + 1 / : n}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n} / : n} = \infty$$

$$= \lim_{n \to +\infty} \frac{6n + 1}{n}$$

$$= \lim_{n \to +\infty} \frac{6n + 1}{n}$$

Rješenje
a)
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = \infty - \infty$$

$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) \cdot \frac{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} =$$

$$\frac{a^2 - b^2 = (a - b)(a + b)}{\sum_{n \to +\infty} \frac{(n^2 + 5n + 1) - (n^2 - n)}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}} =$$

$$= \lim_{n \to +\infty} \frac{6n + 1 / : n}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n} / : n} =$$

$$= \lim_{n \to +\infty} \frac{\frac{6n + 1}{n}}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}$$

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

$$n = \sqrt{n^2}$$

Rješenje
a)
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = -\infty$$

$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) \cdot \frac{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} = -\infty$$

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

$$= \lim_{n \to +\infty} \frac{6n + 1 / : n}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n} / : n} = -\infty$$

$$= \lim_{n \to +\infty} \frac{\frac{6n + 1}{n}}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} = \lim_{n \to +\infty} -\infty$$

Rješenje
a)
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = \infty - \infty$$

$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) \cdot \frac{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} =$$

$$\frac{a^2 - b^2 = (a - b)(a + b)}{2} = \lim_{n \to +\infty} \frac{(n^2 + 5n + 1) - (n^2 - n)}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} =$$

$$= \lim_{n \to +\infty} \frac{6n + 1 / : n}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n} / : n} =$$

$$= \lim_{n \to +\infty} \frac{6n + 1}{\sqrt{n^2 + 5n + 1}} = \lim_{n \to +\infty} \frac{6n + 1}{\sqrt{n^2}}$$

Rješenje
a)
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = \frac{1}{\infty} - \infty$$

$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) \cdot \frac{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} = \frac{1}{2} = \lim_{n \to +\infty} \frac{(n^2 + 5n + 1) - (n^2 - n)}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} = \frac{1}{2} = \lim_{n \to +\infty} \frac{6n + 1 / n}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n} / n} = \frac{6n + 1}{2} = \frac{6n + 1}{2}$$

$$\frac{\infty}{\infty} = \lim_{n \to +\infty} \frac{6n+1/: n}{\sqrt{n^2+5n+1} + \sqrt{n^2-n}/: n} = \lim_{n \to +\infty} \frac{\frac{6n+1}{n}}{\sqrt{n^2+5n+1}} = \lim_{n \to +\infty} \frac{\frac{6n+1}{n}}{\sqrt{n^2+5n+1} + \sqrt{n^2-n}} = \lim_{n \to +\infty} \frac{\frac{6n+1}{n}}{\sqrt{n^2+5n+1}} = \lim_{n \to +\infty} \frac{6n+1}{n} = \lim_{n \to +\infty} \frac{6n+1}{n}$$

Rješenje
a)
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = \infty - \infty$$

$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) \cdot \frac{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} =$$

$$\frac{a^2 - b^2 = (a - b)(a + b)}{\infty} = \lim_{n \to +\infty} \frac{(n^2 + 5n + 1) - (n^2 - n)}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} =$$

$$= \lim_{n \to +\infty} \frac{6n + 1 / : n}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n} / : n} =$$

$$= \lim_{n \to +\infty} \frac{6n + 1}{\sqrt{n^2 + 5n + 1}} = \lim_{n \to +\infty} \frac{6n + 1}{\sqrt{n^2 + 5n + 1}} + \sqrt{\frac{n^2 - n}{n^2}}$$

$$n = \sqrt{n^2}$$

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

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

Rješenje
a)
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = \infty - \infty$$

$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) \cdot \frac{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} =$$

$$\frac{a^2 - b^2 = (a - b)(a + b)}{\infty} = \lim_{n \to +\infty} \frac{(n^2 + 5n + 1) - (n^2 - n)}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} =$$

$$= \lim_{n \to +\infty} \frac{6n + 1 / n}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n} / n} = \lim_{n \to +\infty} \frac{6n + 1}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n} / n} =$$

$$= \lim_{n \to +\infty} \frac{6n + 1}{\sqrt{n^2 + 5n + 1}} = \lim_{n \to +\infty} \frac{6n + 1}{\sqrt{n^2 + 5n + 1}} + \sqrt{\frac{n^2 - n}{n^2}}$$

$$= \lim_{n \to +\infty} \frac{6 + \frac{1}{n}}{\sqrt{n^2 + 5n + 1}} = \lim_{n \to +\infty} \frac{6 + \frac{1}{n}}{\sqrt{n^2 + 5n + 1}} =$$

$$= \lim_{n \to +\infty} \frac{6 + \frac{1}{n}}{\sqrt{n^2 + 5n + 1}} = \lim_{n \to +\infty} \frac{6 + \frac{1}{n}}{\sqrt{n^2 + 5n + 1}} =$$

Rješenje
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = \infty - \infty$$

$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) \cdot \frac{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} = \infty$$

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

$$= \lim_{n \to +\infty} \frac{6n + 1 / : n}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n} / : n} = \infty$$

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

$$= \sqrt{n^2}$$

$$6 + \frac{1}{-}$$

6n + 1

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

6n + 1

Rješenje
a)
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = \infty - \infty$$

$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) \cdot \frac{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} = \infty$$

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

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

$$= \lim_{n \to +\infty} \frac{6n + 1 / n}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n} / n} = \infty$$

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

$$= \sqrt{n^2}$$

$$6 + \frac{1}{\sqrt{n^2 + 5n + 1}}$$

6n + 1

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

6n + 1

Rješenje
a)
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = -\infty - \infty$$

$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) \cdot \frac{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} =$$

$$\frac{a^2 - b^2 = (a - b)(a + b)}{2} = \lim_{n \to +\infty} \frac{(n^2 + 5n + 1) - (n^2 - n)}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} =$$

$$= \lim_{n \to +\infty} \frac{6n + 1 / : n}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n} / : n} =$$

$$\frac{6n + 1}{2}$$

$$\frac{6n + 1}{2}$$

$$\lim_{n \to +\infty} \frac{\frac{n}{\sqrt{n^2 + 5n + 1}} + \frac{\sqrt{n^2 - n}}{\sqrt{n^2}}}{\sqrt{n^2}} = \lim_{n \to +\infty} \frac{\frac{n}{\sqrt{n^2 + 5n + 1}} + \frac{\sqrt{n^2 - n}}{\sqrt{n^2}}}{\lim_{n \to +\infty} \frac{c}{n^p}} = 0, \quad c, p \in \mathbb{R}, p > 0$$

$$= \lim_{n \to +\infty} \frac{6 + \frac{1}{n}}{\sqrt{1 + \frac{5}{n} + \frac{1}{n^2}} + \sqrt{1 - \frac{1}{n}}} = \frac{1}{30/43}$$

Rješenje
a)
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = \infty - \infty$$
a)
$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) \cdot \frac{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} = \infty$$

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

$$= \lim_{n \to +\infty} \frac{6n + 1 / : n}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n} / : n} = \infty$$

$$= \lim_{n \to +\infty} \frac{6n + 1}{\sqrt{n^2 + 5n + 1}} = \lim_{n \to +\infty} \frac{6n + 1}{\sqrt{n^2 + 5n + 1}} = \lim_{n \to +\infty} \frac{6n + 1}{\sqrt{n^2 + 5n + 1}} = \infty$$

$$\lim_{n \to +\infty} \frac{c}{n^p} = 0, \quad c, p \in \mathbb{R}, p > 0$$

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

30 / 43

6 + 0

Rješenje
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = \infty - \infty$$

$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) \cdot \frac{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} = \sum_{n \to +\infty} \frac{(n^2 + 5n + 1) - (n^2 - n)}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} = \sum_{n \to +\infty} \frac{(n^2 + 5n + 1) - (n^2 - n)}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} = \sum_{n \to +\infty} \frac{6n + 1}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n} / : n} = \sum_{n \to +\infty} \frac{6n + 1}{\sqrt{n^2 + 5n + 1}} = \lim_{n \to +\infty} \frac{6n + 1}$$

$$\lim_{n \to +\infty} \sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n} / : n$$

$$= \lim_{n \to +\infty} \frac{6n + 1}{\sqrt{n^2 + 5n + 1}} = \lim_{n \to +\infty} \frac{6n + 1}{\sqrt{n^2 - n}}$$

$$\lim_{n \to +\infty} \frac{\frac{6n+1}{n}}{\frac{\sqrt{n^2+5n+1}}{\sqrt{n^2}} + \frac{\sqrt{n^2-n}}{\sqrt{n^2}}} = \lim_{n \to +\infty} \frac{\frac{6n+1}{n}}{\frac{c}{n^p}} = 0, \quad c, p \in \mathbb{R}, p > 0$$

 $\lim_{n \to +\infty} \frac{n}{\sqrt{n^2 + 5n + 1}} + \frac{\sqrt{n^2 - n}}{\sqrt{n^2}} = \lim_{n \to +\infty} \frac{n}{\sqrt{n^p}} = 0, \quad c, p \in \mathbb{R}, p > 0$

 $= \lim_{n \to +\infty} \frac{n}{\sqrt{1 + \frac{5}{n} + \frac{1}{n^2}} + \sqrt{1 - \frac{1}{n}}} = \frac{1}{\sqrt{1 + 0 + 0} + \sqrt{1 - 0}}$

Rješenje
a)
$$\lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) = \frac{\infty}{\infty - \infty}$$

$$= \lim_{n \to +\infty} \left(\sqrt{n^2 + 5n + 1} - \sqrt{n^2 - n} \right) \cdot \frac{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} = \frac{a^2 - b^2 = (a - b)(a + b)}{\sum_{n \to +\infty} \frac{(n^2 + 5n + 1) - (n^2 - n)}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}}} = \frac{6n + 1}{\sqrt{n^2 + 5n + 1} + \sqrt{n^2 - n}} = \frac{6n + 1}{\sqrt{n^2 + 5n + 1} + \sqrt{$$

$$\lim_{n \to +\infty} \frac{\frac{6n+1}{n}}{\frac{\sqrt{n^2+5n+1}}{\sqrt{n^2+5n+1}} + \frac{\sqrt{n^2-n}}{\sqrt{n^2+5n+1}}} = \lim_{n \to +\infty} \frac{\frac{6n+1}{n}}{\sqrt{\frac{n^2+5n+1}{n^2+3n+1}} + \sqrt{\frac{n^2-n}{n^2+3n+1}}}$$

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

$$= \sqrt{n^2}$$

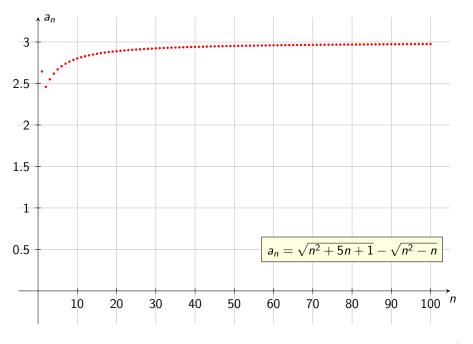
$$\frac{\sqrt{n^2 + 5n + 1}}{\sqrt{n^2}} + \frac{\sqrt{n^2 - n}}{\sqrt{n^2}} \qquad n \to +\infty \qquad \sqrt{\frac{n^2 + 5n + 1}{n^2}} + \sqrt{\frac{n^2 - n}{n^2}}$$

$$= \sqrt{n^2}$$

$$6 + \frac{1}{n}$$

$$= \sqrt{n^2} \qquad \sqrt{n^2} \qquad$$

 $\lim_{n \to +\infty} \frac{n}{\sqrt{1 + \frac{5}{n} + \frac{1}{n^2}} + \sqrt{1 - \frac{1}{n}}} = \frac{6 + 0}{\sqrt{1 + 0 + 0} + \sqrt{1 - 0}} = 3$ 30 / 43



b)
$$\lim_{n\to+\infty}\left(\sqrt{6n-5}-\sqrt{n+2}\right)=$$

b)
$$\lim_{n \to +\infty} \left(\sqrt{6n-5} - \sqrt{n+2} \right) = \infty$$

 $\lim_{n \to +\infty} \left(\sqrt{6n-5} - \sqrt{n+2} \right) = \boxed{a^2 - b^2 = (a-b)(a+b)}$

b)

 $= \lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \,\right)$

 $\lim_{n \to +\infty} \left(\sqrt{6n-5} - \sqrt{n+2} \right) = \frac{a^2 - b^2 = (a-b)(a+b)}{a^2 - b^2}$

 $= \lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \,\right) \cdot -$

 $\lim_{n \to +\infty} \left(\sqrt{6n-5} - \sqrt{n+2} \right) = \frac{a^2 - b^2 = (a-b)(a+b)}{a^2 - b^2}$

b)

$$= \lim_{n \to +\infty} \left(\sqrt{6n-5} - \sqrt{n+2} \right) \cdot \frac{\sqrt{6n-5} + \sqrt{n+2}}{}$$

 $\lim_{n \to +\infty} \left(\sqrt{6n-5} - \sqrt{n+2} \right) = \frac{a^2 - b^2 = (a-b)(a+b)}{a^2 - b^2}$

$$= \lim_{n \to +\infty} \left(\sqrt{6n-5} - \sqrt{n+2} \right) \cdot \frac{\sqrt{6n-5} + \sqrt{n+2}}{\sqrt{6n-5} + \sqrt{n+2}}$$

 $\lim_{n \to +\infty} \left(\sqrt{6n-5} - \sqrt{n+2} \right) = \frac{a^2 - b^2 = (a-b)(a+b)}{a^2 - b^2}$

$$=\lim_{n\to+\infty}$$

 $=\lim_{n\to+\infty} \left(\sqrt{6n-5}-\sqrt{n+2}\right) \cdot \frac{\sqrt{6n-5}+\sqrt{n+2}}{\sqrt{6n-5}+\sqrt{n+2}} =$

 $\lim_{n \to +\infty} \left(\sqrt{6n-5} - \sqrt{n+2} \right) = \frac{a^2 - b^2 = (a-b)(a+b)}{a^2 - b^2 = (a-b)(a+b)}$

$$= \lim_{n \to +\infty} \frac{1}{\sqrt{6n-5} + \sqrt{n+2}}$$

 $=\lim_{n\to+\infty} \left(\sqrt{6n-5}-\sqrt{n+2}\right) \cdot \frac{\sqrt{6n-5}+\sqrt{n+2}}{\sqrt{6n-5}+\sqrt{n+2}} =$

 $\lim_{n \to +\infty} \left(\sqrt{6n-5} - \sqrt{n+2} \right) = \boxed{a^2 - b^2 = (a-b)(a+b)}$

$$= \lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \right) \cdot \frac{\sqrt{6n - 5} + \sqrt{n + 2}}{\sqrt{6n - 5} + \sqrt{n + 2}} =$$

$$= \lim_{n \to +\infty} \frac{(6n - 5)}{\sqrt{6n - 5} + \sqrt{n + 2}}$$

 $\lim_{n \to +\infty} \left(\sqrt{6n-5} - \sqrt{n+2} \right) = \frac{a^2 - b^2}{\left[a^2 - b^2 \right]} = \frac{a^2 - b^2}{\left[a^2 - b \right]}$

b)
$$\lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \right) = \frac{a^2 - b^2 = (a - b)(a + b)}{a^2 - b^2 = (a - b)(a + b)}$$

$$= \lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \right) \cdot \frac{\sqrt{6n - 5} + \sqrt{n + 2}}{\sqrt{6n - 5} + \sqrt{n + 2}} =$$

$$= \lim_{n \to +\infty} \frac{(6n - 5) - \sqrt{n + 2}}{\sqrt{6n - 5} + \sqrt{n + 2}}$$

$$= \lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \right) \cdot \frac{\sqrt{6n - 5} + \sqrt{n + 2}}{\sqrt{6n - 5} + \sqrt{n + 2}} =$$

$$= \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}}$$

 $\lim_{n \to +\infty} \left(\sqrt{6n-5} - \sqrt{n+2} \right) = \boxed{a^2 - b^2 = (a-b)(a+b)}$

$$\lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \right) = \frac{a^2 - b^2 = (a - b)(a + b)}{a^2 - b^2 = (a - b)(a + b)}$$

$$= \lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \right) \cdot \frac{\sqrt{6n - 5} + \sqrt{n + 2}}{\sqrt{6n - 5} + \sqrt{n + 2}} =$$

$$= \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (6n - 5)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (6n - 5)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) -$$

$$\lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \right) = \frac{a^2 - b^2 = (a - b)(a + b)}{a^2 - b^2 = (a - b)(a + b)}$$

$$= \lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \right) \cdot \frac{\sqrt{6n - 5} + \sqrt{n + 2}}{\sqrt{6n - 5} + \sqrt{n + 2}} =$$

$$= \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}}$$

$$\lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \right) = \frac{a^2 - b^2 = (a - b)(a + b)}{a^2 - b^2 = (a - b)(a + b)}$$

$$= \lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \right) \cdot \frac{\sqrt{6n - 5} + \sqrt{n + 2}}{\sqrt{6n - 5} + \sqrt{n + 2}} =$$

$$= \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{5n - 7}{\sqrt{6n - 5} + \sqrt{n + 2}}$$

$$\lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \right) = \frac{a^2 - b^2 = (a - b)(a + b)}{a^2 - b^2 = (a - b)(a + b)}$$

$$= \lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \right) \cdot \frac{\sqrt{6n - 5} + \sqrt{n + 2}}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{5n - 7}{\sqrt{6n - 5} + \sqrt{n + 2}}$$

$$\lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \right) = \frac{a^2 - b^2 = (a - b)(a + b)}{a^2 - b^2 = (a - b)(a + b)}$$

$$= \lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \right) \cdot \frac{\sqrt{6n - 5} + \sqrt{n + 2}}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{5n - 7}{\sqrt{6n - 5} + \sqrt{n + 2}}$$

Najveća potencija u brojniku je n.

$$\lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \right) = \frac{a^2 - b^2 = (a - b)(a + b)}{a^2 - b^2 = (a - b)(a + b)}$$

$$= \lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \right) \cdot \frac{\sqrt{6n - 5} + \sqrt{n + 2}}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{5n - 7}{\sqrt{6n - 5} + \sqrt{n + 2}}$$

- Najveća potencija u brojniku je n.
 Najveća potencija u nazivniku je √n.
- Najveća potencija u nazivinku je V

b)
$$\lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \right) = \frac{a^2 - b^2 = (a - b)(a + b)}{a^2 - b^2 = (a - b)(a + b)}$$

$$= \lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \right) \cdot \frac{\sqrt{6n - 5} + \sqrt{n + 2}}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{5n - 7}{\sqrt{6n - 5} + \sqrt{n + 2}}$$

- Najveća potencija u brojniku je n.
- Najveća potencija u nazivniku je \sqrt{n} .
- Dijelimo brojnik i nazivnik s *n*.

$$\lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \right) = \frac{1}{a^2 - b^2} = (a - b)(a + b)$$

$$= \lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \right) \cdot \frac{\sqrt{6n - 5} + \sqrt{n + 2}}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n}$$

- Najveća potencija u brojniku je n.
- Najveća potencija u nazivniku je \sqrt{n} .
- Dijelimo brojnik i nazivnik s *n*.

$$= \lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \right) \cdot \frac{\sqrt{6n - 5} + \sqrt{n + 2}}{\sqrt{6n - 5} + \sqrt{n + 2}} =$$

$$= \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{5n - 7 /: n}{\sqrt{6n - 5} + \sqrt{n + 2} /: n} =$$

$$= \lim_{n \to +\infty} \frac{1}{n + 2} = \lim_{n \to +\infty} \frac{32/43}{n}$$

$$\lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \right) = \frac{a^2 - b^2 = (a - b)(a + b)}{a^2 - b^2 = (a - b)(a + b)}$$

$$= \lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \right) \cdot \frac{\sqrt{6n - 5} + \sqrt{n + 2}}{\sqrt{6n - 5} + \sqrt{n + 2}} = \frac{\sum_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \frac{5n - 7}{5n - 7}$$

$$\lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \right) = \frac{a^2 - b^2 = (a - b)(a + b)}{a^2 - b^2 = (a - b)(a + b)}$$

$$= \lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \right) \cdot \frac{\sqrt{6n - 5} + \sqrt{n + 2}}{\sqrt{6n - 5} + \sqrt{n + 2}} = \frac{\infty}{\infty}$$

$$= \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \frac{5n - 7}{n}$$

$$= \lim_{n \to +\infty} \frac{\frac{5n - 7}{\sqrt{6n - 5}}}{\sqrt{n^2}} + \frac{\sqrt{n + 2}}{\sqrt{n^2}}$$

$$n = \sqrt{n^2}$$

$$\lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \right) = \frac{a^2 - b^2 = (a - b)(a + b)}{a^2 - b^2 = (a - b)(a + b)}$$

$$= \lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \right) \cdot \frac{\sqrt{6n - 5} + \sqrt{n + 2}}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{5n - 7}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \frac{5n - 7}{n}$$

$$= \lim_{n \to +\infty} \frac{\frac{5n-7}{n}}{\frac{\sqrt{6n-5}}{\sqrt{n^2}} + \frac{\sqrt{n+2}}{\sqrt{n^2}}} = \lim_{n \to +\infty} \frac{1}{n}$$

$$= \lim_{n \to +\infty} \frac{\sqrt{n}}{\sqrt{n}} = \lim_{n \to +\infty} \frac{1}{\sqrt{n}} = \lim_{n$$

$$\lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \right) = \frac{a^2 - b^2 = (a - b)(a + b)}{a^2 - b^2 = (a - b)(a + b)}$$

$$= \lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \right) \cdot \frac{\sqrt{6n - 5} + \sqrt{n + 2}}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{5n - 7 / n}{\sqrt{6n - 5} + \sqrt{n + 2} / n} = \lim_{n \to +\infty} \frac{\frac{5n - 7}{n}}{\sqrt{6n - 5}} = \lim_{n \to +\infty} \frac{\frac{5n - 7}{n}}{\sqrt{n^2}}$$

$$= \lim_{n \to +\infty} \frac{\frac{5n - 7}{\sqrt{6n - 5}}}{\sqrt{n^2}} + \frac{\sqrt{n + 2}}{\sqrt{n^2}} = \lim_{n \to +\infty} \frac{\frac{5n - 7}{n}}{\sqrt{n^2}}$$

$$\lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \right) = \frac{a^2 - b^2 = (a - b)(a + b)}{a^2 - b^2 = (a - b)(a + b)}$$

$$= \lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \right) \cdot \frac{\sqrt{6n - 5} + \sqrt{n + 2}}{\sqrt{6n - 5} + \sqrt{n + 2}} = \frac{\infty}{\infty}$$

$$= \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{5n - 7 / n}{\sqrt{6n - 5} + \sqrt{n + 2} / n} = \frac{5n - 7}{n}$$

$$= \lim_{n \to +\infty} \frac{\frac{n}{\sqrt{6n-5}}}{\frac{\sqrt{6n-5}}{\sqrt{n^2}} + \frac{\sqrt{n+2}}{\sqrt{n^2}}} = \lim_{n \to +\infty} \frac{\frac{n}{\sqrt{6n-5}}}{\sqrt{\frac{6n-5}{n^2}} + \sqrt{\frac{n+2}{n^2}}}$$

$$n = \sqrt{n^2}$$

$$= \lim_{n \to +\infty} \frac{(6n-5) - (n+2)}{\sqrt{6n-5} + \sqrt{n+2}} = \lim_{n \to +\infty} \frac{5n-7 /: n}{\sqrt{6n-5} + \sqrt{n+2} /: n} =$$

$$= \lim_{n \to +\infty} \frac{\frac{5n-7}{n}}{\sqrt{6n-5}} = \lim_{n \to +\infty} \frac{\frac{5n-7}{n}}{\sqrt{\frac{6n-5}{n^2}} + \sqrt{\frac{n+2}{n^2}}} =$$

$$= \lim_{n \to +\infty} \frac{1}{n} = \lim_{n \to +\infty} \frac{1}{n} = \lim_{n \to +\infty} \frac{\frac{5n-7}{n}}{\sqrt{\frac{6n-5}{n^2}} + \sqrt{\frac{n+2}{n^2}}} =$$

$$= \lim_{n \to +\infty} \frac{1}{n} = \lim_{n \to +\infty}$$

 $\lim_{n \to +\infty} \left(\sqrt{6n-5} - \sqrt{n+2} \right) = \boxed{a^2 - b^2 = (a-b)(a+b)}$

 $= \lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \right) \cdot \frac{\sqrt{6n - 5} + \sqrt{n + 2}}{\sqrt{6n - 5} + \sqrt{n + 2}} =$

$$= \lim_{n \to +\infty} \frac{(6n-5) - (n+2)}{\sqrt{6n-5} + \sqrt{n+2}} = \lim_{n \to +\infty} \frac{5n-7 /: n}{\sqrt{6n-5} + \sqrt{n+2} /: n} =$$

$$= \lim_{n \to +\infty} \frac{\frac{5n-7}{n}}{\sqrt{\frac{6n-5}{\sqrt{n^2}} + \frac{\sqrt{n+2}}{\sqrt{n^2}}}} = \lim_{n \to +\infty} \frac{\frac{5n-7}{n}}{\sqrt{\frac{6n-5}{n^2} + \sqrt{\frac{n+2}{n^2}}}} =$$

$$= \lim_{n \to +\infty} \frac{5 - \frac{7}{n}}{\sqrt{\frac{6n-5}{n^2} + \frac{n+2}{n^2}}} =$$

$$= \lim_{n \to +\infty} \frac{5 - \frac{7}{n}}{\sqrt{\frac{6n-5}{n^2} + \frac{n+2}{n^2}}} =$$

$$= \lim_{n \to +\infty} \frac{32/43}{\sqrt{\frac{6n-5}{n^2} + \frac{n+2}{n^2}}} =$$

 $\lim_{n \to +\infty} \left(\sqrt{6n-5} - \sqrt{n+2} \right) = \boxed{a^2 - b^2 = (a-b)(a+b)}$

 $= \lim_{n \to +\infty} \left(\sqrt{6n-5} - \sqrt{n+2} \right) \cdot \frac{\sqrt{6n-5} + \sqrt{n+2}}{\sqrt{6n-5} + \sqrt{n+2}} =$

$$= \lim_{n \to +\infty} \frac{(6n-5) - (n+2)}{\sqrt{6n-5} + \sqrt{n+2}} = \lim_{n \to +\infty} \frac{5n-7 /: n}{\sqrt{6n-5} + \sqrt{n+2} /: n} =$$

$$= \lim_{n \to +\infty} \frac{\frac{5n-7}{n}}{\sqrt{6n-5}} = \lim_{n \to +\infty} \frac{\frac{5n-7}{n}}{\sqrt{\frac{6n-5}{n^2} + \sqrt{n+2}}} =$$

$$n = \sqrt{n^2}$$

 $= \lim_{n \to +\infty} \frac{n}{\sqrt{\frac{6}{n} - \frac{5}{n^2}} + \sqrt{\frac{1}{n} + \frac{2}{n^2}}}$

 $\lim_{n \to +\infty} \left(\sqrt{6n-5} - \sqrt{n+2} \right) = \frac{a^2 - b^2 = (a-b)(a+b)}{a^2 - b^2}$

 $= \lim_{n \to +\infty} \left(\sqrt{6n-5} - \sqrt{n+2} \right) \cdot \frac{\sqrt{6n-5} + \sqrt{n+2}}{\sqrt{6n-5} + \sqrt{n+2}} =$

$$= \lim_{n \to +\infty} \frac{(6n-5) - (n+2)}{\sqrt{6n-5} + \sqrt{n+2}} = \lim_{n \to +\infty} \frac{5n-7/: n}{\sqrt{6n-5} + \sqrt{n+2}/: n} =$$

$$= \lim_{n \to +\infty} \frac{\frac{5n-7}{n}}{\frac{\sqrt{6n-5}}{\sqrt{n^2}} + \frac{\sqrt{n+2}}{\sqrt{n^2}}} = \lim_{n \to +\infty} \frac{\frac{5n-7}{n}}{\sqrt{\frac{6n-5}{n^2}} + \sqrt{\frac{n+2}{n^2}}} =$$

$$n = \sqrt{n^2}$$

 $= \lim_{n \to +\infty} \frac{n}{\sqrt{\frac{6}{5} - \frac{5}{5^2} + \sqrt{\frac{1}{5} + \frac{2}{5^2}}}}$

 $= \lim_{n \to +\infty} \left(\sqrt{6n-5} - \sqrt{n+2} \right) \cdot \frac{\sqrt{6n-5} + \sqrt{n+2}}{\sqrt{6n-5} + \sqrt{n+2}} =$

$$= \lim_{n \to +\infty} \frac{(6n-5) - (n+2)}{\sqrt{6n-5} + \sqrt{n+2}} = \lim_{n \to +\infty} \frac{5n-7 /: n}{\sqrt{6n-5} + \sqrt{n+2} /: n} =$$

$$= \lim_{n \to +\infty} \frac{\frac{5n-7}{n}}{\sqrt{6n-5} + \sqrt{n+2}} = \lim_{n \to +\infty} \frac{\frac{5n-7}{n}}{\sqrt{6n-5} + \sqrt{n+2}} =$$

$$n = \sqrt{n^2} \frac{1}{\sqrt{n^2}} + \frac{\sqrt{n+2}}{\sqrt{n^2}} = \lim_{n \to +\infty} \frac{\frac{5n-7}{n}}{\sqrt{6n-5} + \sqrt{n+2}} =$$

$$\lim_{n \to +\infty} \frac{c}{n^p} = 0, \quad c, p \in \mathbb{R}, p > 0$$

 $= \lim_{n \to +\infty} \frac{1}{\sqrt{\frac{6}{n} - \frac{5}{n^2}} + \sqrt{\frac{1}{n} + \frac{2}{n^2}}}$

 $= \lim_{n \to +\infty} \left(\sqrt{6n-5} - \sqrt{n+2} \right) \cdot \frac{\sqrt{6n-5} + \sqrt{n+2}}{\sqrt{6n-5} + \sqrt{n+2}} =$

 $\lim_{n \to +\infty} \left(\sqrt{6n-5} - \sqrt{n+2} \right) = \frac{a^2 - b^2 = (a-b)(a+b)}{a^2 - b^2}$

32 / 43

$$= \lim_{n \to +\infty} \frac{(6n-5) - (n+2)}{\sqrt{6n-5} + \sqrt{n+2}} = \lim_{n \to +\infty} \frac{5n-7/: n}{\sqrt{6n-5} + \sqrt{n+2}/: n} =$$

$$= \lim_{n \to +\infty} \frac{\frac{5n-7}{n}}{\sqrt{6n-5}} = \lim_{n \to +\infty} \frac{\frac{5n-7}{n}}{\sqrt{6n-5}} =$$

$$= \lim_{n \to +\infty} \frac{\frac{5n-7}{n}}{\sqrt{6n-5}} = \lim_{n \to +\infty} \frac{\frac{5n-7}{n}}{\sqrt{6n-5}} = \lim_{n \to +\infty} \frac{c}{n} = 0, \quad c, p \in \mathbb{R}, p > 0$$

 $= \lim_{n \to +\infty} \frac{1}{\sqrt{\frac{6}{n} - \frac{5}{n^2}} + \sqrt{\frac{1}{n} + \frac{2}{n^2}}}$

5 - 0

 $= \lim_{n \to +\infty} \left(\sqrt{6n-5} - \sqrt{n+2} \right) \cdot \frac{\sqrt{6n-5} + \sqrt{n+2}}{\sqrt{6n-5} + \sqrt{n+2}} =$

$$= \lim_{n \to +\infty} \frac{(6n-5) - (n+2)}{\sqrt{6n-5} + \sqrt{n+2}} = \lim_{n \to +\infty} \frac{5n-7 /: n}{\sqrt{6n-5} + \sqrt{n+2} /: n} =$$

$$= \lim_{n \to +\infty} \frac{\frac{5n-7}{n}}{\sqrt{6n-5}} = \lim_{n \to +\infty} \frac{\frac{5n-7}{n}}{\sqrt{6n-5} / n+2} =$$

$$n = \sqrt{n^2} \frac{\lim_{n \to +\infty} \frac{c}{n} = 0, \quad c, p \in \mathbb{R}, p > 0$$

 $= \lim_{n \to +\infty} \frac{n}{\sqrt{\frac{6}{n} - \frac{5}{n^2}} + \sqrt{\frac{1}{n} + \frac{2}{n^2}}} = \frac{1}{\sqrt{0 - 0} + \sqrt{0 + 0}}$

 $= \lim_{n \to +\infty} \left(\sqrt{6n-5} - \sqrt{n+2} \right) \cdot \frac{\sqrt{6n-5} + \sqrt{n+2}}{\sqrt{6n-5} + \sqrt{n+2}} =$

$$= \lim_{n \to +\infty} \frac{(6n-5) - (n+2)}{\sqrt{6n-5} + \sqrt{n+2}} = \lim_{n \to +\infty} \frac{5n-7/: n}{\sqrt{6n-5} + \sqrt{n+2}/: n} =$$

$$= \lim_{n \to +\infty} \frac{\frac{5n-7}{n}}{\frac{\sqrt{6n-5}}{\sqrt{n^2}} + \frac{\sqrt{n+2}}{\sqrt{n^2}}} = \lim_{n \to +\infty} \frac{\frac{5n-7}{n}}{\frac{\sqrt{6n-5}}{\sqrt{n^2}} + \frac{\sqrt{n+2}}{\sqrt{n^2}}} =$$

$$\lim_{n \to +\infty} \frac{c}{n^p} = 0, \quad c, p \in \mathbb{R}, p > 0$$

 $= \lim_{n \to +\infty} \frac{\frac{n}{\sqrt{\frac{6}{n} - \frac{5}{n^2}} + \sqrt{\frac{1}{n} + \frac{2}{n^2}}}}{\sqrt{\frac{1}{n} - \frac{5}{n^2}} + \sqrt{\frac{1}{n} + \frac{2}{n^2}}} = \frac{5 - 0}{\sqrt{0 - 0} + \sqrt{0 + 0}} = \frac{5}{0 + 0}$

 $= \lim_{n \to +\infty} \left(\sqrt{6n-5} - \sqrt{n+2} \right) \cdot \frac{\sqrt{6n-5} + \sqrt{n+2}}{\sqrt{6n-5} + \sqrt{n+2}} =$

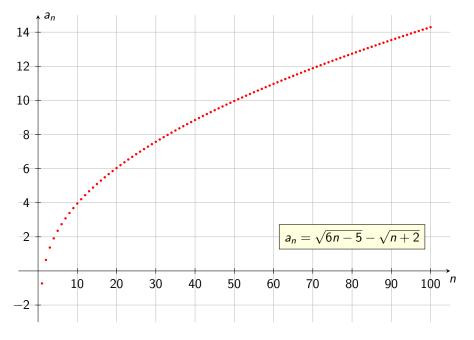
$$= \lim_{n \to +\infty} \left(\sqrt{6n - 5} - \sqrt{n + 2} \right) \cdot \frac{\sqrt{6n - 5} + \sqrt{n + 2}}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{(6n - 5) - (n + 2)}{\sqrt{6n - 5} + \sqrt{n + 2}} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \lim_{n \to +\infty} \frac{5n - 7 / : n}{\sqrt{6n - 5} + \sqrt{n + 2} / : n} = \lim_{n \to +\infty} \frac{5n$$

 $\lim_{n \to +\infty} \left(\sqrt{6n-5} - \sqrt{n+2} \right) = \frac{a^2 - b^2 = (a-b)(a+b)}{a^2 - b^2}$

$$= \lim_{n \to +\infty} \frac{\frac{5n - l}{n}}{\frac{\sqrt{6n - 5}}{\sqrt{n^2}} + \frac{\sqrt{n + 2}}{\sqrt{n^2}}} = \lim_{n \to +\infty} \frac{\frac{5n - l}{n}}{\sqrt{\frac{6n - 5}{n^2}} + \sqrt{\frac{n + 2}{n^2}}} =$$

$$= \lim_{n \to +\infty} \frac{5 - \frac{7}{n}}{\sqrt{\frac{6}{n} - \frac{5}{n^2}} + \sqrt{\frac{1}{n} + \frac{2}{n^2}}} = \frac{5 - 0}{\sqrt{0 - 0} + \sqrt{0 + 0}} = \frac{5}{0 + 0} = +\infty$$

5n - 7



$$\lim_{n\to +\infty}\frac{3-4\cdot 5^n}{5\cdot 3^{n+1}+6\cdot 5^{n-1}}=$$

$$\lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^{n+1} + 6 \cdot 5^{n-1}} = \lim_{n \to +\infty} -----$$

$$\lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^{n+1} + 6 \cdot 5^{n-1}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{}$$

$$\lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^{n+1} + 6 \cdot 5^{n-1}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5}$$

$$\lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^{n+1} + 6 \cdot 5^{n-1}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^n \cdot 3}$$

$$\lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^{n+1} + 6 \cdot 5^{n-1}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^n \cdot 3 + 6}$$

$$\lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^{n+1} + 6 \cdot 5^{n-1}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^n \cdot 3 + 6 \cdot 5^n \cdot 5^{-1}}$$

$$\lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^{n+1} + 6 \cdot 5^{n-1}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^n \cdot 3 + 6 \cdot 5^n \cdot 5^{-1}} =$$

$$\rightarrow +\infty$$

$$\lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^{n+1} + 6 \cdot 5^{n-1}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^n \cdot 3 + 6 \cdot 5^n \cdot 5^{-1}} =$$

$$\lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^{n+1} + 6 \cdot 5^{n-1}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^n \cdot 3 + 6 \cdot 5^n \cdot 5^{-1}} =$$

$$=\lim_{n\to+\infty}\frac{3-4\cdot 5^n}{15\cdot 3^n}$$

$$\lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^{n+1} + 6 \cdot 5^{n-1}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^n \cdot 3 + 6 \cdot 5^n \cdot 5^{-1}} =$$

$$= \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + }$$

$$\lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^{n+1} + 6 \cdot 5^{n-1}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^n \cdot 3 + 6 \cdot 5^n \cdot 5^{-1}} =$$

$$=\lim_{n\to+\infty}\frac{3-4\cdot 5^n}{15\cdot 3^n+\frac{6}{5}\cdot 5^n}$$

c)
$$\lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{5 \cdot 3^{n+1} + 6 \cdot 5^{n-1}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{5 \cdot 3^{n} \cdot 3 + 6 \cdot 5^{n} \cdot 5^{-1}} = \frac{1}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}$$

$$\lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{5 \cdot 3^{n+1} + 6 \cdot 5^{n-1}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{5 \cdot 3^{n} \cdot 3 + 6 \cdot 5^{n} \cdot 5^{-1}} = \frac{1}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}$$

• U brojniku i nazivniku se javljaju potencije 3ⁿ i 5ⁿ.

$$\lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{5 \cdot 3^{n+1} + 6 \cdot 5^{n-1}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{5 \cdot 3^{n} \cdot 3 + 6 \cdot 5^{n} \cdot 5^{-1}} = \frac{1}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}$$

- U brojniku i nazivniku se javljaju potencije 3^n i 5^n .
- Dijelimo brojnik i nazivnik s potencijom koja ima najveću bazu.

$$\lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{5 \cdot 3^{n+1} + 6 \cdot 5^{n-1}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{5 \cdot 3^{n} \cdot 3 + 6 \cdot 5^{n} \cdot 5^{-1}} = \frac{1}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}$$

- U brojniku i nazivniku se javljaju potencije 3^n i 5^n .
- Dijelimo brojnik i nazivnik s potencijom koja ima najveću bazu.
- ullet Dakle, u ovom slučaju dijelimo brojnik i nazivnik s 5^n .

$$\lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{5 \cdot 3^{n+1} + 6 \cdot 5^{n-1}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{5 \cdot 3^{n} \cdot 3 + 6 \cdot 5^{n} \cdot 5^{-1}} = \frac{1}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{$$

- U brojniku i nazivniku se javljaju potencije 3ⁿ i 5ⁿ.
- Dijelimo brojnik i nazivnik s potencijom koja ima najveću bazu.
- Dakle, u ovom slučaju dijelimo brojnik i nazivnik s 5^n .

$$\lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{5 \cdot 3^{n+1} + 6 \cdot 5^{n-1}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{5 \cdot 3^{n} \cdot 3 + 6 \cdot 5^{n} \cdot 5^{-1}} = \frac{\sum_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}}{\sum_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}}}{\sum_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}}}$$

- U brojniku i nazivniku se javljaju potencije 3ⁿ i 5ⁿ.
- Dijelimo brojnik i nazivnik s potencijom koja ima najveću bazu.
- Dakle, u ovom slučaju dijelimo brojnik i nazivnik s 5^n .

$$\lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{5 \cdot 3^{n+1} + 6 \cdot 5^{n-1}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{5 \cdot 3^{n} \cdot 3 + 6 \cdot 5^{n} \cdot 5^{-1}} = \frac{\infty}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}$$

- U brojniku i nazivniku se javljaju potencije 3ⁿ i 5ⁿ.
- Dijelimo brojnik i nazivnik s potencijom koja ima najveću bazu.
- Dakle, u ovom slučaju dijelimo brojnik i nazivnik s 5ⁿ.

c)
$$\lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{5 \cdot 3^{n+1} + 6 \cdot 5^{n-1}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{5 \cdot 3^{n} \cdot 3 + 6 \cdot 5^{n} \cdot 5^{-1}} = \frac{\infty}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}} = \lim_{n \to +\infty} \frac{\frac{3 - 4 \cdot 5^{n}}{5^{n}}}{\frac{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{5^$$

$$=\lim_{n\to+\infty}$$

c)
$$\lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{5 \cdot 3^{n+1} + 6 \cdot 5^{n-1}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{5 \cdot 3^{n} \cdot 3 + 6 \cdot 5^{n} \cdot 5^{-1}} = \frac{\infty}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{\frac{5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}}$$

$$=\lim_{n\to+\infty}\frac{\frac{3}{5^n}-4}{}$$

$$\lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{5 \cdot 3^{n+1} + 6 \cdot 5^{n-1}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{5 \cdot 3^{n} \cdot 3 + 6 \cdot 5^{n} \cdot 5^{-1}} = \frac{\infty}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{$$

$$= \lim_{n \to +\infty} \frac{\frac{3}{5^n} - 4}{15 \cdot \frac{3^n}{5^n} + \frac{6}{5}}$$

$$\lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{5 \cdot 3^{n+1} + 6 \cdot 5^{n-1}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{5 \cdot 3^{n} \cdot 3 + 6 \cdot 5^{n} \cdot 5^{-1}} = \frac{\infty}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{\frac{3 - 4 \cdot 5^{n}}{5^{n}}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{5^{n}} = \lim_{n \to +\infty} \frac{3$$

$$= \lim_{n \to +\infty} \frac{\frac{3}{5^n} - 4}{15 \cdot \frac{3^n}{5^n} + \frac{6}{5}} = \lim_{n \to +\infty} ----$$

$$\lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{5 \cdot 3^{n+1} + 6 \cdot 5^{n-1}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{5 \cdot 3^{n} \cdot 3 + 6 \cdot 5^{n} \cdot 5^{-1}} = \frac{\infty}{5}$$

$$= \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{\frac{3 - 4 \cdot 5^{n}}{5^{n}}}{\frac{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}{5^{n}}} = \lim_{n \to +\infty} \frac{\frac{3}{5^{n}} - 4}{15 \cdot \frac{3^{n}}{5^{n}} + \frac{6}{5}} = \lim_{n \to +\infty} \frac{3 \cdot \left(\frac{1}{5}\right)^{n} - 4}{\frac{15}{5^{n}} \cdot \frac{3^{n}}{5^{n}} + \frac{6}{5}} = \lim_{n \to +\infty} \frac{3 \cdot \left(\frac{1}{5}\right)^{n} - 4}{\frac{15}{5^{n}} \cdot \frac{3^{n}}{5^{n}} + \frac{6}{5}} = \lim_{n \to +\infty} \frac{3 \cdot \left(\frac{1}{5}\right)^{n} - 4}{\frac{15}{5^{n}} \cdot \frac{3^{n}}{5^{n}} + \frac{6}{5}} = \lim_{n \to +\infty} \frac{3 \cdot \left(\frac{1}{5}\right)^{n} - 4}{\frac{15}{5^{n}} \cdot \frac{3^{n}}{5^{n}} + \frac{6}{5}} = \lim_{n \to +\infty} \frac{3 \cdot \left(\frac{1}{5}\right)^{n} - 4}{\frac{15}{5^{n}} \cdot \frac{3^{n}}{5^{n}} + \frac{6}{5}} = \lim_{n \to +\infty} \frac{3 \cdot \left(\frac{1}{5}\right)^{n} - 4}{\frac{15}{5^{n}} \cdot \frac{3^{n}}{5^{n}} + \frac{6}{5}} = \lim_{n \to +\infty} \frac{3 \cdot \left(\frac{1}{5}\right)^{n} - 4}{\frac{15}{5^{n}} \cdot \frac{3^{n}}{5^{n}} + \frac{6}{5}} = \lim_{n \to +\infty} \frac{3 \cdot \left(\frac{1}{5}\right)^{n} - 4}{\frac{15}{5^{n}} \cdot \frac{3^{n}}{5^{n}} + \frac{6}{5}} = \lim_{n \to +\infty} \frac{3 \cdot \left(\frac{1}{5}\right)^{n} - 4}{\frac{15}{5^{n}} \cdot \frac{3^{n}}{5^{n}} + \frac{6}{5}} = \lim_{n \to +\infty} \frac{3 \cdot \left(\frac{1}{5}\right)^{n} - 4}{\frac{15}{5^{n}} \cdot \frac{3^{n}}{5^{n}} + \frac{6}{5}} = \lim_{n \to +\infty} \frac{3 \cdot \left(\frac{1}{5}\right)^{n} - 4}{\frac{15}{5^{n}} \cdot \frac{3^{n}}{5^{n}} + \frac{6}{5}} = \lim_{n \to +\infty} \frac{3 \cdot \left(\frac{1}{5}\right)^{n} - 4}{\frac{15}{5^{n}} \cdot \frac{3^{n}}{5^{n}} + \frac{6}{5}} = \lim_{n \to +\infty} \frac{3 \cdot \left(\frac{1}{5}\right)^{n} - 4}{\frac{15}{5^{n}} \cdot \frac{3^{n}}{5^{n}} + \frac{6}{5}} = \lim_{n \to +\infty} \frac{3 \cdot \left(\frac{1}{5}\right)^{n} - 4}{\frac{15}{5^{n}} \cdot \frac{3^{n}}{5^{n}} + \frac{6}{5}} = \lim_{n \to +\infty} \frac{3 \cdot \left(\frac{1}{5}\right)^{n} - 4}{\frac{15}{5^{n}} \cdot \frac{3^{n}}{5^{n}} + \frac{6}{5}} = \lim_{n \to +\infty} \frac{3 \cdot \left(\frac{1}{5}\right)^{n} - 4}{\frac{15}{5^{n}} \cdot \frac{3^{n}}{5^{n}} + \frac{6}{5}} = \lim_{n \to +\infty} \frac{3 \cdot \left(\frac{1}{5}\right)^{n} - 4}{\frac{15}{5^{n}} \cdot \frac{3^{n}}{5^{n}} + \frac{6}{5}} = \lim_{n \to +\infty} \frac{3 \cdot \left(\frac{1}{5}\right)^{n} - 4}{\frac{15}{5^{n}} \cdot \frac{3^{n}}{5^{n}} + \frac{6}{5}} = \lim_{n \to +\infty} \frac{3 \cdot \left(\frac{1}{5}\right)^{n} - 4}{\frac{15}{5^{n}} \cdot \frac{3^{n}}{5^{n}} + \frac{6}{5^{n}}} = \lim_{n \to +\infty} \frac{3 \cdot \left(\frac{1}{5}\right)^{n} - 4}{\frac{15}{5^{n}} \cdot \frac{3^{n}}{5^{n}} + \frac{6}{5^{n}}} = \lim_{n \to +\infty} \frac{3 \cdot \left(\frac{1}{5^{n}}\right)^{n} - 4}{\frac{15}{5^{n}} \cdot$$

$$\lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{5 \cdot 3^{n+1} + 6 \cdot 5^{n-1}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{5 \cdot 3^{n} \cdot 3 + 6 \cdot 5^{n} \cdot 5^{-1}} = \frac{3 - 4 \cdot 5^{n}}{5 \cdot 3^{n} \cdot 3 + 6 \cdot 5^{n}}$$

$$= \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{\frac{3 - 4 \cdot 5^{n}}{5^{n}}}{\frac{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}{5^{n}}} =$$

$$= \lim_{n \to +\infty} \frac{\frac{3}{5^n} - 4}{15 \cdot \frac{3^n}{5^n} + \frac{6}{5}} = \lim_{n \to +\infty} \frac{3 \cdot \left(\frac{1}{5}\right)^n - 4}{15 \cdot \left(\frac{3}{5}\right)^n + \frac{6}{5}}$$

$$\lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^{n+1} + 6 \cdot 5^{n-1}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^n \cdot 3 + 6 \cdot 5^n \cdot 5^{-1}} =$$

$$\frac{\infty}{2}$$

$$= \lim_{n \to \infty} \frac{3 - 4 \cdot 5^n}{n}$$

$$-4\cdot5^n$$

$$\frac{1}{n} = \lim_{n \to +\infty}$$

$$\frac{3-4\cdot5^n}{5n}$$

$$= \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{\frac{3 - 4 \cdot 5^{n}}{5^{n}}}{\frac{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}}{5^{n}}} =$$

$$= \lim_{n \to +\infty} \frac{\frac{3}{5^n} - 4}{15 \cdot \frac{3^n}{5^n} + \frac{6}{5}} = \lim_{n \to +\infty} \frac{3 \cdot \left(\frac{1}{5}\right)^n - 4}{15 \cdot \left(\frac{3}{5}\right)^n + \frac{6}{5}} =$$

$$\frac{13}{5^n} + \frac{7}{5}$$

$$\frac{3 \cdot \left(\frac{1}{5}\right) - 4}{15 \cdot \left(\frac{3}{5}\right)^n + \frac{6}{5}}$$

$$\lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^{n+1} + 6 \cdot 5^{n-1}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^n \cdot 3 + 6 \cdot 5^n \cdot 5^{-1}} =$$

$$\frac{\infty}{\infty}$$

$$= \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{\frac{3 - 4 \cdot 5^{n}}{5^{n}}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{\frac{3 - 4 \cdot 5^{n}}{5^{n}}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac$$

$$\lim_{n \to \pm \infty}$$

$$\lim_{n \to +\infty}$$

$$\lim_{n\to+\infty}$$

$$=\lim_{n\to+\infty}$$

$$=\lim_{n\to+\infty}$$

$$=\lim_{n\to+\infty}$$

$$=\lim_{n\to+\infty}$$

$$=\lim_{n\to+\infty}$$

$$=\lim_{n\to+\infty}$$

$$\frac{3n+6}{\cdot 3}$$

$$3^n + \frac{6}{2}$$

$$+\frac{6}{5} \cdot 5$$

$$\frac{1}{5} \cdot 5$$
"

$$\frac{6}{5} \cdot 5^n$$

$$\frac{6}{5} \cdot 5^n$$

$$3 \cdot \left(\frac{1}{5}\right)^n$$
 –

$$3 \cdot \left(\frac{1}{5}\right) -$$

$$\frac{(5)}{(3)^n}$$

$$= \lim_{n \to +\infty} \frac{\frac{3}{5^n} - 4}{15 \cdot \frac{3^n}{5^n} + \frac{6}{5}} = \lim_{n \to +\infty} \frac{3 \cdot \left(\frac{1}{5}\right)^n - 4}{15 \cdot \left(\frac{3}{5}\right)^n + \frac{6}{5}} =$$

$$\lim_{n\to+\infty}q^n=0,\quad |q|<1$$

$$\lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^{n+1} + 6 \cdot 5^{n-1}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^n \cdot 3 + 6 \cdot 5^n \cdot 5^{-1}} =$$

$$= \lim_{x \to 0} \frac{3 - 4 \cdot 5}{1 - 2 \cdot 6}$$

$$= \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{\frac{3 - 4 \cdot 5^{n}}{5^{n}}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5$$

$$= \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5}}$$

$$\frac{1}{15\cdot 3^n+\frac{6}{5}}$$

$$\frac{9}{5} \cdot 5^n$$

$$= \lim_{n \to +\infty} \frac{\frac{3}{5^n} - 4}{15 \cdot \frac{3^n}{5^n} + \frac{6}{5}} = \lim_{n \to +\infty} \frac{3 \cdot \left(\frac{1}{5}\right)^n - 4}{15 \cdot \left(\frac{3}{5}\right)^n + \frac{6}{5}} =$$

$$0 - 4$$

$$\lim_{n\to+\infty}q^n=0,\quad |q|<1$$

$$\lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^{n+1} + 6 \cdot 5^{n-1}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^n \cdot 3 + 6 \cdot 5^n \cdot 5^{-1}} =$$

$$\frac{\infty}{\infty}$$

$$= \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{\frac{3 - 4 \cdot 5^{n}}{5^{n}}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} =$$

$$\lim_{\substack{\longrightarrow +\infty \\ \longrightarrow +\infty}} \frac{3-4\cdot 5}{15\cdot 3^n + \frac{6}{2}}$$

$$\lim_{\to +\infty} \frac{3-4\cdot 5^n}{15\cdot 3^n+\frac{6}{5}}$$

$$-\frac{6}{5} \cdot$$

$$\frac{1}{15^n} = \lim_{n \to +\infty} \frac{1}{15}$$

$$= \lim_{n \to +\infty} \frac{\frac{3}{5^n} - 4}{15 \cdot \frac{3^n}{5^n} + \frac{6}{5}} = \lim_{n \to +\infty} \frac{3 \cdot \left(\frac{1}{5}\right)^n - 4}{15 \cdot \left(\frac{3}{5}\right)^n + \frac{6}{5}} =$$

$$=\frac{3\cdot 0-4}{15\cdot 0+\frac{6}{5}}$$

$$\lim_{n \to +\infty} q^n = 0, \quad |q| < 1$$

$$\lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^{n+1} + 6 \cdot 5^{n-1}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^n \cdot 3 + 6 \cdot 5^n \cdot 5^{-1}} =$$

 $= \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^{n}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} = \lim_{n \to +\infty} \frac{\frac{3 - 4 \cdot 5^{n}}{5^{n}}}{15 \cdot 3^{n} + \frac{6}{5} \cdot 5^{n}} =$

$$= \lim_{n \to +\infty}$$

$$\lim_{n \to +\infty}$$

$$15\cdot 3^n+\tfrac{6}{5}$$

$$1.5 \cdot 3'' + \frac{2}{5} \cdot 5'$$

$$\frac{3}{5^n} - 4$$

$$= \lim_{n \to +\infty} \frac{\frac{3}{5^n} - 4}{15 \cdot \frac{3^n}{5^n} + \frac{6}{5}} = \lim_{n \to +\infty} \frac{3 \cdot \left(\frac{1}{5}\right)^n - 4}{15 \cdot \left(\frac{3}{5}\right)^n + \frac{6}{5}} =$$

$$= \frac{3 \cdot 0 - 4}{15 \cdot 0 + \frac{6}{5}} = \frac{-4}{\frac{6}{5}}$$

$$\lim_{n\to+\infty}q^n=0,\quad |q|<1$$

$$\lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^{n+1} + 6 \cdot 5^{n-1}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^n \cdot 3 + 6 \cdot 5^n \cdot 5^{-1}} =$$

$$\frac{\infty}{\infty}$$

$$\frac{\infty}{\infty} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{\frac{3 - 4 \cdot 5^n}{5^n}}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{\frac{3 - 4 \cdot 5^n}{5^n}}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4$$

$$= \lim_{n \to +\infty} \frac{\frac{3}{5^n} - 4}{15 \cdot \frac{3^n}{5^n} + \frac{6}{5}} = \lim_{n \to +\infty} \frac{3 \cdot \left(\frac{1}{5}\right)^n - 4}{15 \cdot \left(\frac{3}{5}\right)^n + \frac{6}{5}} =$$

$$= \frac{3 \cdot 0 - 4}{15 \cdot 0 + \frac{6}{5}} = \frac{-4}{\frac{6}{5}} = \frac{-4 \cdot 5}{6}$$

$$\lim_{n \to \infty} q^n = 0, \quad |q| < 1$$

$$\lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^{n+1} + 6 \cdot 5^{n-1}} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{5 \cdot 3^n \cdot 3 + 6 \cdot 5^n \cdot 5^{-1}} =$$

$$\lim_{1 \to \infty} \frac{3 - 4 \cdot !}{15 \cdot 27 \cdot 16}$$

$$-4\cdot5$$

$$\frac{\infty}{\infty} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{\frac{3 - 4 \cdot 5^n}{5^n}}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{\frac{3 - 4 \cdot 5^n}{5^n}}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4 \cdot 5^n}{15 \cdot 3^n + \frac{6}{5} \cdot 5^n} = \lim_{n \to +\infty} \frac{3 - 4$$

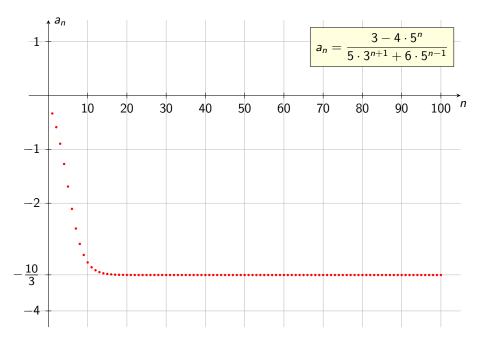
$$\frac{4}{6} = \lim_{n \to +\infty}$$

$$+\frac{6}{5}$$

$$= \lim_{n \to +\infty} \frac{\frac{3}{5^n} - 4}{15 \cdot \frac{3^n}{5^n} + \frac{6}{5}} = \lim_{n \to +\infty} \frac{3 \cdot \left(\frac{1}{5}\right)^n - 4}{15 \cdot \left(\frac{3}{5}\right)^n + \frac{6}{5}} =$$

$$= \frac{3 \cdot 0 - 4}{15 \cdot 0 + \frac{6}{5}} = \frac{-4}{\frac{6}{5}} = \frac{-4 \cdot 5}{6} = -\frac{10}{3}$$

$$\lim_{n\to+\infty}q^n=0,\quad |q|<1$$



peti zadatak

Zadatak 5

Izračunajte sljedeće limese:

a)
$$\lim_{n\to+\infty} \left(\frac{n+2}{n}\right)^{3n}$$

b)
$$\lim_{n \to +\infty} \left(\frac{n^2 + 2}{n^2 + 1} \right)^{\frac{1}{3}n^2}$$

Rješenje

a)

$$\lim_{n\to+\infty} \left(\frac{n+2}{n}\right)^{3n} =$$

Rješenje
$$\lim_{n \to +\infty} \frac{n+2}{n} = 1$$

$$\lim_{n\to+\infty} \left(\frac{n+2}{n}\right)^{3n} =$$

Rješenje
$$\lim_{n \to +\infty} \frac{n+2}{n} = 1$$
 $\lim_{n \to +\infty} 3n = +\infty$

$$\lim_{n\to+\infty} \left(\frac{n+2}{n}\right)^{3n} =$$

Rješenje $\lim_{n \to +\infty} \frac{n+2}{n} = 1$ $\lim_{n \to +\infty} 3n = +\infty$ $\lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$

$$\lim_{n\to+\infty} \left(\frac{n+2}{n}\right)^{3n} =$$

$$\lim_{n\to+\infty}\frac{1}{n}=1$$

Rješenje $\lim_{n \to +\infty} \frac{n+2}{n} = 1$ $\lim_{n \to +\infty} 3n = +\infty$ $\lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$

$$\lim_{n \to +\infty} \left(\frac{n+2}{n} \right)^{3n} = \lim_{n \to +\infty} \left(1 + \frac{n+2}{n} - 1 \right)$$

Izrazu $\frac{n+2}{n}$ dodamo i oduzmemo 1

Rješenje
$$\lim_{n \to +\infty} \frac{n+2}{n} = 1 \qquad \lim_{n \to +\infty} 3n = +\infty \qquad \lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$$

$$\lim_{n \to +\infty} \left(\frac{n+2}{n} \right)^{3n} = \lim_{n \to +\infty} \left(1 + \frac{n+2}{n} - 1 \right)^{3n}$$

Rješenje
$$\lim_{n \to +\infty} \frac{n+2}{n} = 1$$
 $\lim_{n \to +\infty} 3n = +\infty$ $\lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$

$$\frac{}{n}=1$$

Rješenje
$$\lim_{n \to +\infty} \frac{n+2}{n} = 1 \qquad \lim_{n \to +\infty} 3n = +\infty \qquad \lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$$

$$\lim_{n \to +\infty} \left(\frac{n+2}{n} \right)^{3n} = \lim_{n \to +\infty} \left(1 + \frac{n+2}{n} - 1 \right)^{3n} = \lim_{\substack{\text{svedemo na} \\ \text{zajednički nazivnik}}}$$

$$=\lim_{n\to+\infty}\left(1+\frac{2}{n}\right)$$

$$\lim_{n\to+\infty} \frac{}{n} = 1$$

Rješenje
$$\lim_{n \to +\infty} \frac{n+2}{n} = 1 \qquad \lim_{n \to +\infty} 3n = +\infty \qquad \lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$$

zajednički nazivnik

$$\lim_{n \to +\infty} \left(\frac{n+2}{n} \right)^{3n} = \lim_{n \to +\infty} \left(1 + \underbrace{\frac{n+2}{n} - 1}_{\text{svedemo na}} \right)^{3n} =$$

$$=\lim_{n\to+\infty}\left(1+\frac{2}{n}\right)^{3n}$$

$$\lim_{n\to+\infty}\frac{1}{n}=1$$

Rješenje
$$\lim_{n \to +\infty} \frac{n+2}{n} = 1$$
 $\lim_{n \to +\infty} 3n = +\infty$ $\lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$

$$\lim_{n \to +\infty} \left(\frac{n+2}{n} \right)^{3n} = \lim_{n \to +\infty} \left(1 + \underbrace{\frac{n+2}{n} - 1}_{\text{svedemo na zajednički nazivnik}} \right)^{3n} =$$

$$= \lim_{n \to +\infty} \left(1 + \frac{2}{n} \right)^{3n} = \lim_{n \to +\infty} \left(1 + \frac{2}{n} \right)$$

$$\lim_{n\to+\infty}\frac{1}{n}=1$$

Rješenje
$$\lim_{n \to +\infty} \frac{n+2}{n} = 1 \qquad \lim_{n \to +\infty} 3n = +\infty \qquad \lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$$

$$\lim_{n \to +\infty} \left(\frac{n+2}{n} \right)^{3n} = \lim_{n \to +\infty} \left(1 + \underbrace{\frac{n+2}{n} - 1}_{\text{svedemo na zajednički nazivnik}} \right)^{3n} =$$

$$=\lim_{n\to+\infty}\left(1+\frac{2}{n}\right)^{3n}=\lim_{n\to+\infty}\left(1+\frac{2}{n}\right)^{\frac{n}{2}}$$

$$\lim_{n\to+\infty}\frac{n+2}{n}=1$$

Rješenje
$$\lim_{n \to +\infty} \frac{n+2}{n} = 1$$
 $\lim_{n \to +\infty} 3n = +\infty$ $\lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$

$$\lim_{n \to +\infty} \left(\frac{n+2}{n} \right)^{3n} = \lim_{n \to +\infty} \left(1 + \underbrace{\frac{n+2}{n} - 1}_{\text{svedemo na zajednički nazivnik}} \right)^{3n} =$$

$$=\lim_{n\to+\infty}\left(1+\frac{2}{n}\right)^{3n}=\lim_{n\to+\infty}\left(1+\frac{2}{n}\right)^{\frac{n}{2}\cdot3n}$$

$$\lim_{n\to+\infty}\frac{n+2}{n}=1$$

Rješenje
$$\lim_{n \to +\infty} \frac{n+2}{n} = 1 \qquad \lim_{n \to +\infty} 3n = +\infty \qquad \lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$$

$$\lim_{n \to +\infty} \left(\frac{n+2}{n}\right)^{3n} = \lim_{n \to +\infty} \left(1 + \frac{n+2}{n} - 1\right)^{3n} = \lim_{\substack{\text{svedemo na} \\ \text{zajednički nazivnik}}}$$

$$=\lim_{n\to+\infty}\left(1+\frac{2}{n}\right)^{3n}=\lim_{n\to+\infty}\left(1+\frac{2}{n}\right)^{\frac{n}{2}\cdot3n\cdot\frac{2}{n}}$$

Rješenje $\lim_{n \to +\infty} \frac{n+2}{n} = 1$ $\lim_{n \to +\infty} 3n = +\infty$ $\lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$

$$\lim_{n\to+\infty}$$

$$\lim_{n \to +\infty} \left(\frac{n+2}{n} \right)^{3n} = \lim_{n \to +\infty} \left(1 + \underbrace{\frac{n+2}{n} - 1}_{\text{svedemo na zajednički nazivnik}} \right)^{3n} =$$

$$\lim_{n \to +\infty} \left(\frac{1}{n} \right) = \lim_{n \to +\infty} \left(1 + \frac{1}{n} - 1 \right)$$
svedemo na zajednički nazivnik

svedemo na zajednički nazivnik
$$\left(1+rac{2}{r}
ight)^{3n}=\lim_{n \to \infty}\left(1+rac{2}{r}
ight)^{rac{n}{2}\cdot 3n\cdot rac{2}{n}}=\lim_{n \to \infty}\left[\left(1+rac{2}{r}
ight)^{3n}\right]^{n}$$

$$= \lim_{n \to +\infty} \left(1 + \frac{2}{n} \right)^{3n} = \lim_{n \to +\infty} \left(1 + \frac{2}{n} \right)^{\frac{n}{2} \cdot 3n \cdot \frac{2}{n}} = \lim_{n \to +\infty} \left[\left(1 + \frac{2}{n} \right)^{\frac{n}{2}} \right]^{0}$$

Rješenje a)
$$\lim_{n \to +\infty} \frac{n+2}{n} = 1 \qquad \lim_{n \to +\infty} 3n = +\infty \qquad \lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$$



 $\lim_{n \to +\infty} \left(\frac{n+2}{n} \right)^{3n} = \lim_{n \to +\infty} \left(1 + \frac{n+2}{n} - 1 \right)^{3n} =$ svedemo na

$$= \lim_{n \to +\infty} \left(1 + \underbrace{\frac{n+2}{n} - 1}_{\text{svedemo na}} \right)$$

$$n \to +\infty$$

svedemo na
zajednički nazivnik

$$\left[\begin{array}{ccc} & & & \\ & & & \\ & & & \end{array} \right]^{\frac{n}{2}}$$

$$= \left[\lim_{n \to +\infty} \left(1 + \frac{2}{n}\right)^{\frac{n}{2}}\right]^{6}$$

$$(a^n)^m = a$$

$$\lim_{n\to+\infty}\frac{}{n}=1$$

Rješenje
$$\lim_{n \to +\infty} \frac{n+2}{n} = 1 \qquad \lim_{n \to +\infty} 3n = +\infty \qquad \lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$$

zajednički nazivnik

$$\lim_{n \to +\infty} \left(\frac{n+2}{n} \right)^{3n} = \lim_{n \to +\infty} \left(1 + \underbrace{\frac{n+2}{n} - 1}_{\text{svedemo na}} \right)^{3n} =$$

• Kada je
$$n$$
 jako veliki prirodni broj, tada je $\frac{2}{n}$ jako mali broj.
$$\left[\left(1+\frac{2}{n}\right)^{\frac{n}{2}}\right]^{0} =$$

$$\left[\left(1+\frac{1}{n}\right)\right] =$$

$$= \left[\lim_{n \to +\infty} \left(1 + \frac{2}{n} \right)^{\frac{n}{2}} \right]^{6}$$

$$=a^{nm}$$

$$\lim_{n\to+\infty} \frac{}{n} = 1$$

Rješenje
$$\lim_{n \to +\infty} \frac{n+2}{n} = 1 \qquad \lim_{n \to +\infty} 3n = +\infty \qquad \lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$$

$$\lim_{n \to +\infty} \left(\frac{n+2}{n} \right)^{3n} = \lim_{n \to +\infty} \left(1 + \underbrace{\frac{n+2}{n} - 1}_{\text{svedemo na zajednički nazivnik}} \right)^{3n} =$$

- Kada je n jako veliki prirodni broj, tada je $\frac{2}{n}$ jako mali broj. $\left| \left(1 + \frac{2}{n} \right)^{\frac{n}{2}} \right|^{\frac{n}{2}} = \frac{n}{2}$ je recipročna vrijednost broja $\frac{2}{n}$.
- $\frac{n}{2}$ je recipročna vrijednost broja $\frac{2}{n}$.

$$= \left[\lim_{n \to +\infty} \left(1 + \frac{2}{n}\right)^{\frac{n}{2}}\right]^{6}$$

$$a^n = a^{nm}$$

Rješenje
$$\lim_{n \to +\infty} \frac{n+2}{n} = 1 \qquad \lim_{n \to +\infty} 3n = +\infty \qquad \lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$$

$$=\lim_{n \to \infty} \left(1 + \frac{n+2}{n-1} - 1\right)^{3n} =$$

$$\lim_{n \to +\infty} \left(\frac{n+2}{n} \right)^{3n} = \lim_{n \to +\infty} \left(1 + \underbrace{\frac{n+2}{n} - 1}_{\text{svedemo na zajednički nazivnik}} \right)^{3n} =$$

- Kada je n jako veliki prirodni broj, tada je $\frac{2}{n}$ jako mali broj. $\left| \left(1 + \frac{2}{n} \right)^{\frac{n}{2}} \right|^{\frac{n}{2}} = \frac{n}{n}$ je recipročna vrijednost broja $\frac{2}{n}$.

•
$$\frac{n}{2}$$
 je recipročna vrijednost broja $\frac{2}{n}$.

$$= \left[\lim_{n \to +\infty} \left(1 + \frac{2}{n}\right)^{\frac{n}{2}}\right]^{6}$$

$$(a^n)^m = a^n$$

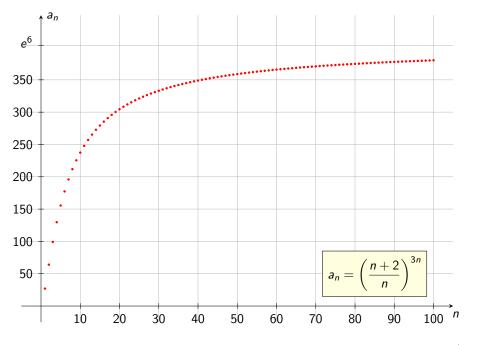
$$(1+{\sf jako\ mali\ broj})^{\sf recipročna\ vrijednost\ tog\ jako\ malog\ broja}$$
 teži broju e

Rješenje
a)
$$\lim_{n \to +\infty} \frac{n+2}{n} = 1 \qquad \lim_{n \to +\infty} 3n = +\infty \qquad \lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$$

$$\lim_{n \to +\infty} \left(\frac{n+2}{n}\right)^{3n} = \lim_{n \to +\infty} \left(1 + \frac{n+2}{n} - 1\right)^{3n} = e$$

$$= \lim_{n \to +\infty} \left(1 + \frac{2}{n} \right)^{3n} = \lim_{n \to +\infty} \left(1 + \frac{2}{n} \right)^{\frac{n}{2} \cdot 3n \cdot \frac{2}{n}} = \lim_{n \to +\infty} \left[\left(1 + \frac{2}{n} \right)^{\frac{n}{2}} \right]^{6} =$$

 $= \left| \lim_{n \to +\infty} \left(1 + \frac{2}{n} \right)^{\frac{n}{2}} \right|^{0} = e^{6}$



b)

$$\lim_{n\to+\infty} \left(\frac{n^2+2}{n^2+1}\right)^{\frac{1}{3}n^2} =$$

$$\lim_{n\to+\infty}\frac{n^2+2}{n^2+1}=1$$

$$\lim_{n\to+\infty} \left(\frac{n^2+2}{n^2+1}\right)^{\frac{1}{3}n^2} =$$

$$\lim_{n \to +\infty} \frac{n^2 + 2}{n^2 + 1} = 1 \qquad \lim_{n \to +\infty} \frac{1}{3}n^2 = +\infty$$

$$\lim_{n\to+\infty} \left(\frac{n^2+2}{n^2+1}\right)^{\frac{1}{3}n^2} =$$

 $\lim_{n\to+\infty} \left(\frac{n^2+2}{n^2+1}\right)^{\frac{1}{3}n^2} =$

 $\lim_{n \to +\infty} \frac{n^2 + 2}{n^2 + 1} = 1 \qquad \lim_{n \to +\infty} \frac{1}{3}n^2 = +\infty \qquad \lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$

$$\lim_{n \to +\infty} \left(\frac{n^2 + 2}{n^2 + 1} \right)^{\frac{1}{3}n^2} = \lim_{n \to +\infty} \left(1 + \frac{n^2 + 2}{n^2 + 1} - 1 \right)$$

 $\lim_{n \to +\infty} \frac{n^2 + 2}{n^2 + 1} = 1 \qquad \lim_{n \to +\infty} \frac{1}{3} n^2 = +\infty \qquad \lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$

Izrazu $\frac{n^2+2}{n^2+1}$ dodamo i oduzmemo 1

 $\lim_{n \to +\infty} \frac{n^2 + 2}{n^2 + 1} = 1 \qquad \lim_{n \to +\infty} \frac{1}{3}n^2 = +\infty \qquad \lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$

$$\lim_{n \to +\infty} \left(\frac{n^2 + 2}{n^2 + 1} \right)^{\frac{1}{3}n^2} = \lim_{n \to +\infty} \left(1 + \frac{n^2 + 2}{n^2 + 1} - 1 \right)^{\frac{1}{3}n^2} =$$

 $\lim_{n \to +\infty} \frac{n^2 + 2}{n^2 + 1} = 1 \qquad \lim_{n \to +\infty} \frac{1}{3}n^2 = +\infty \qquad \lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$

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

 $\lim_{n \to +\infty} \frac{n^2 + 2}{n^2 + 1} = 1 \qquad \lim_{n \to +\infty} \frac{1}{3}n^2 = +\infty \qquad \lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$

$$=\lim_{n\to+\infty}\left(1+\frac{1}{n^2+1}\right)^{\frac{1}{3}n^2}$$

 $\lim_{n \to +\infty} \frac{n^2 + 2}{n^2 + 1} = 1 \qquad \lim_{n \to +\infty} \frac{1}{3} n^2 = +\infty \qquad \lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$

$$=\lim_{n\to+\infty}\left(1+\frac{1}{n^2+1}\right)^{\frac{1}{3}n^2}=\lim_{n\to+\infty}\left(1+\frac{1}{n^2+1}\right)$$

 $\lim_{n \to +\infty} \frac{n^2 + 2}{n^2 + 1} = 1 \qquad \lim_{n \to +\infty} \frac{1}{3}n^2 = +\infty \qquad \lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$

$$= \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{\frac{1}{3}n^2} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{(n^2 + 1)}$$

 $\lim_{n \to +\infty} \frac{n^2 + 2}{n^2 + 1} = 1 \qquad \lim_{n \to +\infty} \frac{1}{3}n^2 = +\infty \qquad \lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$

$$= \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{\frac{1}{3}n^2} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{(n^2 + 1) \cdot \frac{1}{3}n^2}$$

 $\lim_{n \to +\infty} \frac{n^2 + 2}{n^2 + 1} = 1 \qquad \lim_{n \to +\infty} \frac{1}{3}n^2 = +\infty \qquad \lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$

$$= \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{\frac{1}{3}n^2} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{(n^2 + 1) \cdot \frac{1}{3}n^2 \cdot \frac{1}{n^2 + 1}}$$

 $\lim_{n \to +\infty} \frac{n^2 + 2}{n^2 + 1} = 1 \qquad \lim_{n \to +\infty} \frac{1}{3}n^2 = +\infty \qquad \lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$

$$= \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{\frac{1}{3}n^2} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{(n^2 + 1) \cdot \frac{1}{3}n^2 \cdot \frac{1}{n^2 + 1}} = \frac{(a^n)^m = a^{nm}}{(a^n)^m = a^{nm}}$$

 $\lim_{n \to +\infty} \frac{n^2 + 2}{n^2 + 1} = 1 \qquad \lim_{n \to +\infty} \frac{1}{3}n^2 = +\infty \qquad \lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$

$$= \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{\frac{1}{3}n^2} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{(n^2 + 1) \cdot \frac{1}{3}n^2 \cdot \frac{1}{n^2 + 1}} = \left[\lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} \right]$$

$$= \left[\lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} \right]$$

 $\lim_{n \to +\infty} \frac{n^2 + 2}{n^2 + 1} = 1 \qquad \lim_{n \to +\infty} \frac{1}{3} n^2 = +\infty \qquad \lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$

$$= \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{\frac{1}{3}n^2} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{(n^2 + 1) \cdot \frac{1}{3}n^2 \cdot \frac{1}{n^2 + 1}} = \left[\lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} \right]^{\frac{1}{3}n^2} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} = \lim_{n \to +\infty} \left(1$$

 $\lim_{n \to +\infty} \frac{n^2 + 2}{n^2 + 1} = 1 \qquad \lim_{n \to +\infty} \frac{1}{3} n^2 = +\infty \qquad \lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$

$$1^{\infty}$$
 $(n^2+2)^{\frac{1}{3}n^2}$ $(n^2+2)^{\frac{1}{3}n^2}$

 $\lim_{n \to +\infty} \frac{n^2 + 2}{n^2 + 1} = 1 \qquad \lim_{n \to +\infty} \frac{1}{3}n^2 = +\infty \qquad \lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$

$$\lim_{n \to +\infty} \left(\frac{n^2 + 2}{n^2 + 1} \right)^{\frac{1}{3}n^2} = \lim_{n \to +\infty} \left(1 + \underbrace{\frac{n^2 + 2}{n^2 + 1} - 1}_{\text{svedemo na zajednički nazivnik}} \right)^{\frac{1}{3}n^2} =$$

• Kada je *n* jako veliki prirodni broj, tada je $\frac{1}{n^2+1}$ jako mali broj.

$$= \left[\lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1}\right)^{n^2 + 1}\right] \lim_{n \to +\infty} \frac{n^2}{3n^2 + 3}$$

$$\lim_{n \to +\infty} \frac{n^2 + 2}{n^2 + 1} = 1 \qquad \lim_{n \to +\infty} \frac{1}{3}n^2 = +\infty \qquad \lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$$

$$\lim_{n\to+\infty} \left(\frac{n^2+2}{n^2+1}\right)^{\frac{1}{3}n^2} = \lim_{n\to+\infty} \left(1+\frac{n^2+2}{\frac{n^2+1}{n^2+1}-1}\right)^{\frac{1}{3}n^2} = \sup_{\substack{\text{syedemo na} \\ \text{zajednički nazivnik}}}$$

- Kada je n jako veliki prirodni broj, tada je 1/n²+1 jako mali broj.
 n²+1 je recipročna vrijednost broja 1/n²+1.
- n + 1 je reciprocija vrijedilost broja $n^2 + 1$

$$= \left[\lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1}\right)^{n^2 + 1}\right]^{\lim_{n \to +\infty} \frac{n^2}{3n^2 + 3}}$$

• Kada je
$$n$$
 jako veliki prirodni broj, tada je $\frac{1}{n^2+1}$ jako mali broj.
• n^2+1 je recipročna vrijednost broja $\frac{1}{n^2+1}$.
$$= \left[\lim_{n \to +\infty} \left(1 + \frac{1}{n^2+1}\right)^{n^2+1}\right]^{\frac{1}{n^2+1}} \lim_{n \to +\infty} \frac{n^2}{3n^2+3}$$

 $\lim_{n \to +\infty} \frac{n^2 + 2}{n^2 + 1} = 1 \qquad \lim_{n \to +\infty} \frac{1}{3} n^2 = +\infty \qquad \lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$

zajednički nazivnik

b)

 $(1 + \text{jako mali broj})^{\text{recipročna vrijednost tog jako malog broja}}$ teži broju $e^{39/43}$

$$=\lim_{n\to+\infty}\left(1+\frac{1}{n^2+1}\right)^{\frac{1}{3}n^2}=\lim_{n\to+\infty}\left(1+\frac{1}{\frac{1}{n^2+1}}\right)^{\frac{(n^2+1)\cdot\frac{1}{3}n^2\cdot\frac{1}{n^2+1}}}=$$

$$(a^n)^m=a^{nm}$$

 $= \left[\lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1}\right)^{n^2 + 1}\right]^{\lim_{n \to +\infty} \frac{n^2}{3n^2 + 3}} = e^{\frac{1}{3}}$

(1+jako mali broj) recipročna vrijednost tog jako malog broja teži broju e

 $\lim_{n \to +\infty} \frac{n^2 + 2}{n^2 + 1} = 1 \qquad \lim_{n \to +\infty} \frac{1}{3} n^2 = +\infty \qquad \lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$

b)

39 / 43

$$=\lim_{n\to+\infty}\left(1+\frac{1}{n^2+1}\right)^{\frac{1}{3}n^2}=\lim_{n\to+\infty}\left(1+\frac{1}{\frac{1}{n^2+1}}\right)^{\frac{1}{3}n^2\cdot\frac{1}{n^2+1}}=$$

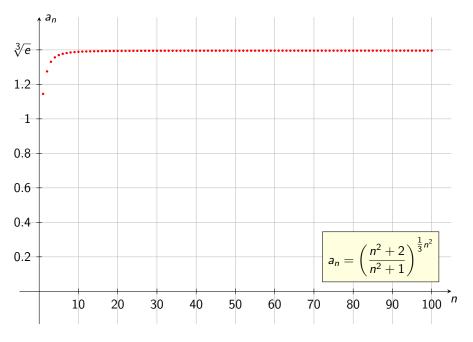
$$(a^n)^m=a^{nm}$$

 $= \left[\lim_{n \to +\infty} \left(1 + \frac{1}{n^2 + 1} \right)^{n^2 + 1} \right]^{\lim_{n \to +\infty} \frac{n^2}{3n^2 + 3}} = e^{\frac{1}{3}} = \sqrt[3]{e}$

 $\lim_{n \to +\infty} \left(\frac{n^2 + 2}{n^2 + 1} \right)^{\frac{1}{3}n^2} = \lim_{n \to +\infty} \left(1 + \frac{n^2 + 2}{n^2 + 1} - 1 \right)^{\frac{1}{3}n^2} =$

 $\lim_{n \to +\infty} \frac{n^2 + 2}{n^2 + 1} = 1 \qquad \lim_{n \to +\infty} \frac{1}{3}n^2 = +\infty \qquad \lim_{n \to +\infty} \left(1 + \frac{1}{n}\right)^n = e$

 $(1 + \text{jako mali broj})^{\text{recipročna vrijednost tog jako malog broja}}$ teži broju $e^{39/43}$





Zapišite periodički decimalni broj 0.43 u obliku razlomka.

Zapišite periodički decimalni broj 0.43 u obliku razlomka.

Rješenje

 $0.\dot{4}\dot{3} =$

Zapišite periodički decimalni broj 0.43 u obliku razlomka.

Rješenje

 $0.\dot{4}\dot{3} = 0.43434343\cdots$

Zapišite periodički decimalni broj 0.43 u obliku razlomka.

$$0.\dot{4}\dot{3} = 0.43434343\cdots =$$

Zapišite periodički decimalni broj 0.43 u obliku razlomka.

$$0.\dot{4}\dot{3}=0.43434343\cdots=0.43$$

Zapišite periodički decimalni broj 0.43 u obliku razlomka.

$$0.\dot{4}\dot{3} = 0.43434343\cdots = 0.43 + 0.0043$$

Zapišite periodički decimalni broj 0.43 u obliku razlomka.

$$0.\dot{4}\dot{3} = 0.43434343\cdots = 0.43 + 0.0043 + 0.000043$$

Zapišite periodički decimalni broj 0.43 u obliku razlomka.

$$0.\dot{4}\dot{3} = 0.43434343\cdots = 0.43 + 0.0043 + 0.000043 + \cdots$$

Zapišite periodički decimalni broj 0.43 u obliku razlomka.

$$0.\dot{4}\dot{3} = 0.43434343\cdots = 0.43 + 0.0043 + 0.000043 + \cdots =$$

Zapišite periodički decimalni broj 0.43 u obliku razlomka.

$$0.\dot{4}\dot{3} = 0.43434343\cdots = 0.43 + 0.0043 + 0.000043 + \cdots =$$

$$= \frac{43}{10^2}$$

Zapišite periodički decimalni broj 0.43 u obliku razlomka.

$$0.\dot{4}\dot{3} = 0.4343434343 \cdots = 0.43 + 0.0043 + 0.000043 + \cdots =$$

$$= \frac{43}{10^2} + \frac{43}{10^4}$$

Zapišite periodički decimalni broj 0.43 u obliku razlomka.

$$0.\dot{4}\dot{3} = 0.4343434343 \cdots = 0.43 + 0.0043 + 0.000043 + \cdots =$$

$$= \frac{43}{10^2} + \frac{43}{10^4} + \frac{43}{10^6}$$

Zapišite periodički decimalni broj 0.43 u obliku razlomka.

$$0.\dot{4}\dot{3} = 0.43434343\cdots = 0.43 + 0.0043 + 0.000043 + \cdots =$$

$$= \frac{43}{10^2} + \frac{43}{10^4} + \frac{43}{10^6} + \cdots$$

Zapišite periodički decimalni broj 0.43 u obliku razlomka.

$$0.\dot{4}\dot{3} = 0.43434343\cdots = 0.43 + 0.0043 + 0.000043 + \cdots =$$

$$= \frac{43}{10^2} + \frac{43}{10^4} + \frac{43}{10^6} + \cdots =$$

Zapišite periodički decimalni broj 0.43 u obliku razlomka.

$$0.43 = 0.43434343 \cdots = 0.43 + 0.0043 + 0.000043 + \cdots =$$

$$= \frac{43}{10^2} + \frac{43}{10^4} + \frac{43}{10^6} + \cdots = \frac{43}{100} \cdot \left(\right)$$

Zapišite periodički decimalni broj 0.43 u obliku razlomka.

$$0.43 = 0.43434343 \cdots = 0.43 + 0.0043 + 0.000043 + \cdots =$$

$$= \frac{43}{10^2} + \frac{43}{10^4} + \frac{43}{10^6} + \cdots = \frac{43}{100} \cdot \left(1\right)$$

Zapišite periodički decimalni broj 0.43 u obliku razlomka.

$$0.43 = 0.43434343 \cdots = 0.43 + 0.0043 + 0.000043 + \cdots =$$

$$= \frac{43}{10^2} + \frac{43}{10^4} + \frac{43}{10^6} + \cdots = \frac{43}{100} \cdot \left(1 + \frac{1}{100}\right)$$

Zapišite periodički decimalni broj 0.43 u obliku razlomka.

$$0.\dot{4}\dot{3} = 0.43434343\cdots = 0.43 + 0.0043 + 0.000043 + \cdots =$$

$$= \frac{43}{10^2} + \frac{43}{10^4} + \frac{43}{10^6} + \cdots = \frac{43}{100} \cdot \left(1 + \frac{1}{100} + \frac{1}{100^2}\right)$$

Zapišite periodički decimalni broj 0.43 u obliku razlomka.

$$0.43 = 0.43434343 \cdots = 0.43 + 0.0043 + 0.000043 + \cdots =$$

$$= \frac{43}{10^2} + \frac{43}{10^4} + \frac{43}{10^6} + \cdots = \frac{43}{100} \cdot \left(1 + \frac{1}{100} + \frac{1}{100^2} + \cdots\right)$$

Zapišite periodički decimalni broj 0.43 u obliku razlomka.

$$\begin{aligned} 0.\dot{4}\dot{3} &= 0.43434343\cdots = 0.43 + 0.0043 + 0.000043 + \cdots = \\ &= \frac{43}{10^2} + \frac{43}{10^4} + \frac{43}{10^6} + \cdots = \frac{43}{100} \cdot \left(1 + \frac{1}{100} + \frac{1}{100^2} + \cdots\right) = \end{aligned}$$

Zapišite periodički decimalni broj 0.43 u obliku razlomka.

$$0.43 = 0.43434343 \cdots = 0.43 + 0.0043 + 0.000043 + \cdots =$$

$$= \frac{43}{10^2} + \frac{43}{10^4} + \frac{43}{10^6} + \cdots = \frac{43}{100} \cdot \left(1 + \frac{1}{100} + \frac{1}{100^2} + \cdots\right) =$$

$$= \frac{43}{100} \cdot$$

Zapišite periodički decimalni broj 0.43 u obliku razlomka.

$$\begin{array}{l} 0.\dot{4}\dot{3} = 0.43434343\cdots = 0.43 + 0.0043 + 0.000043 + \cdots = \\ \\ = \frac{43}{10^2} + \frac{43}{10^4} + \frac{43}{10^6} + \cdots = \frac{43}{100} \cdot \left(1 + \frac{1}{100} + \frac{1}{100^2} + \cdots\right) = \\ \\ = \frac{43}{100} \cdot \end{array}$$

Zapišite periodički decimalni broj 0.43 u obliku razlomka.

$$0.\dot{4}\dot{3} = 0.43434343\cdots = 0.43 + 0.0043 + 0.000043 + \cdots =$$

$$= \frac{43}{10^2} + \frac{43}{10^4} + \frac{43}{10^6} + \cdots = \frac{43}{100} \cdot \left(1 + \frac{1}{100} + \frac{1}{100^2} + \cdots\right) =$$

$$= \frac{43}{100} \cdot \frac{1}{100} \cdot \frac{1}{100^2} + \frac{1}{100^2} + \cdots$$
suma geometrijskog reda

$$a_1 + a_1 q + a_1 q^2 + a_1 q^3 + \dots = \frac{a_1}{1-q}, \quad |q| < 1$$

Zapišite periodički decimalni broj 0.43 u obliku razlomka.

$$0.\dot{4}\dot{3} = 0.43434343\cdots = 0.43 + 0.0043 + 0.000043 + \cdots =$$

$$= \frac{43}{10^2} + \frac{43}{10^4} + \frac{43}{10^6} + \cdots = \frac{43}{100} \cdot \left(1 + \frac{1}{100} + \frac{1}{100^2} + \cdots\right) =$$

$$= \frac{43}{100} \cdot$$
suma geometrijskog reda
$$= \frac{43}{100} \cdot$$

$$a_1 + a_1 q + a_1 q^2 + a_1 q^3 + \cdots = \frac{a_1}{1-q}, \quad |q| < 1$$

Zapišite periodički decimalni broj 0.43 u obliku razlomka.

$$\begin{array}{l} 0.\dot{4}\dot{3}=0.43434343\cdots=0.43+0.0043+0.000043+\cdots=\\ =\frac{43}{10^2}+\frac{43}{10^4}+\frac{43}{10^6}+\cdots=\frac{43}{100}\cdot\left(1+\frac{1}{100}+\frac{1}{100^2}+\cdots\right)=\\ =\frac{43}{100}\cdot\\ &=\frac{43}{100}\cdot\\ &=\frac{1}{100}\end{array}$$

$$|a_1 + a_1q + a_1q^2 + a_1q^3 + \cdots = \frac{a_1}{1-q}, \quad |q| < 1$$

Zapišite periodički decimalni broj 0.43 u obliku razlomka.

$$\begin{array}{l} 0.\dot{4}\dot{3}=0.43434343\cdots=0.43+0.0043+0.000043+\cdots=\\ =\frac{43}{10^2}+\frac{43}{10^4}+\frac{43}{10^6}+\cdots=\frac{43}{100}\cdot\left(1+\frac{1}{100}+\frac{1}{100^2}+\cdots\right)=\\ =\frac{43}{100}\cdot -----\\ =\frac{43}{100}\cdot ------\\ \end{array}$$
 suma geometrijskog reda
$$a_1=1,\ q=\frac{1}{100}$$

$$a_1 + a_1 q + a_1 q^2 + a_1 q^3 + \dots = \frac{a_1}{1-q}, \quad |q| < 1$$

Zapišite periodički decimalni broj 0.43 u obliku razlomka.

$$\begin{array}{l} 0.\dot{4}\dot{3}=0.43434343\cdots=0.43+0.0043+0.000043+\cdots=\\ =\frac{43}{10^2}+\frac{43}{10^4}+\frac{43}{10^6}+\cdots=\frac{43}{100}\cdot\left(1+\frac{1}{100}+\frac{1}{100^2}+\cdots\right)=\\ =\frac{43}{100}\cdot\frac{1}{100} \end{array}$$
 suma geometrijskog reda
$$=\frac{43}{100}\cdot\frac{1}{100}$$

$$a_1 + a_1 q + a_1 q^2 + a_1 q^3 + \dots = \frac{a_1}{1-q}, \quad |q| < 1$$

Zapišite periodički decimalni broj 0.43 u obliku razlomka.

$$\begin{array}{l} 0.\dot{4}\dot{3}=0.43434343\cdots=0.43+0.0043+0.000043+\cdots=\\ &=\frac{43}{10^2}+\frac{43}{10^4}+\frac{43}{10^6}+\cdots=\frac{43}{100}\cdot\left(1+\frac{1}{100}+\frac{1}{100^2}+\cdots\right)=\\ &=\frac{43}{100}\cdot\frac{1}{1-\frac{1}{100}} & \text{suma geometrijskog reda}\\ &=\frac{1}{100}\cdot\frac{1}{1-\frac{1}{100}} & a_1=1,\ q=\frac{1}{100} \end{array}$$

$$a_1 + a_1 q + a_1 q^2 + a_1 q^3 + \dots = \frac{a_1}{1-q}, \quad |q| < 1$$

Zapišite periodički decimalni broj 0.43 u obliku razlomka.

$$\begin{array}{l} 0.\dot{4}\dot{3} = 0.43434343\cdots = 0.43 + 0.0043 + 0.000043 + \cdots = \\ \\ = \frac{43}{10^2} + \frac{43}{10^4} + \frac{43}{10^6} + \cdots = \frac{43}{100} \cdot \left(1 + \frac{1}{100} + \frac{1}{100^2} + \cdots\right) = \\ \\ = \frac{43}{100} \cdot \frac{1}{1 - \frac{1}{100}} = \frac{43}{100} \cdot \\ \\ = \frac{43}{100} \cdot \frac{1}{1 - \frac{1}{100}} = \frac{43}{100} \cdot \\ \\ = \frac{1}{100} \cdot \frac{1}{100} = \frac{1}{100} \end{array}$$

$$a_1 + a_1 q + a_1 q^2 + a_1 q^3 + \dots = \frac{a_1}{1-q}, \quad |q| < 1$$

Zapišite periodički decimalni broj 0.43 u obliku razlomka.

$$\begin{array}{l} 0.\dot{4}\dot{3}=0.43434343\cdots=0.43+0.0043+0.000043+\cdots=\\ &=\frac{43}{10^2}+\frac{43}{10^4}+\frac{43}{10^6}+\cdots=\frac{43}{100}\cdot\left(1+\frac{1}{100}+\frac{1}{100^2}+\cdots\right)=\\ &=\frac{43}{100}\cdot\frac{1}{1-\frac{1}{100}}=\frac{43}{100}\cdot\frac{1}{\frac{99}{100}} & \text{suma geometrijskog reda}\\ &=a_1=1,\ q=\frac{1}{100} \end{array}$$

$$|a_1 + a_1q + a_1q^2 + a_1q^3 + \cdots = \frac{a_1}{1-q}, \quad |q| < 1$$

Zapišite periodički decimalni broj 0.43 u obliku razlomka.

$$\begin{aligned} 0.\dot{4}\dot{3} &= 0.43434343\cdots = 0.43 + 0.0043 + 0.000043 + \cdots = \\ &= \frac{43}{10^2} + \frac{43}{10^4} + \frac{43}{10^6} + \cdots = \frac{43}{100} \cdot \left(1 + \frac{1}{100} + \frac{1}{100^2} + \cdots\right) = \\ &= \frac{43}{100} \cdot \frac{1}{1 - \frac{1}{100}} = \frac{43}{100} \cdot \frac{1}{\frac{99}{100}} = & \text{suma geometrijskog reda} \\ &= a_1 = 1, \ q = \frac{1}{100} \end{aligned}$$

$$=\frac{43}{100}\cdot\frac{100}{99}$$

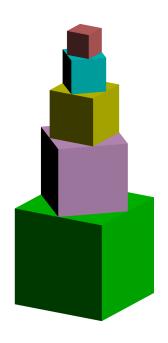
$$a_1 + a_1 q + a_1 q^2 + a_1 q^3 + \dots = \frac{a_1}{1 - q}, \quad |q| < 1$$

Zapišite periodički decimalni broj 0.43 u obliku razlomka.

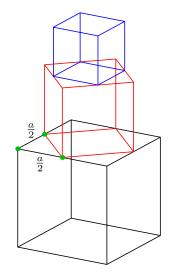
$$\begin{aligned} 0.\dot{4}\dot{3} &= 0.43434343\cdots = 0.43 + 0.0043 + 0.000043 + \cdots = \\ &= \frac{43}{10^2} + \frac{43}{10^4} + \frac{43}{10^6} + \cdots = \frac{43}{100} \cdot \left(1 + \frac{1}{100} + \frac{1}{100^2} + \cdots\right) = \\ &= \frac{43}{100} \cdot \frac{1}{1 - \frac{1}{100}} = \frac{43}{100} \cdot \frac{1}{\frac{99}{100}} = & \text{suma geometrijskog reda} \\ &= a_1 = 1, \ q = \frac{1}{100} \end{aligned}$$

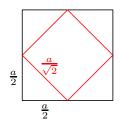
$$a_1 + a_1 q + a_1 q^2 + a_1 q^3 + \dots = rac{a_1}{1-q}, \quad |q| < 1$$

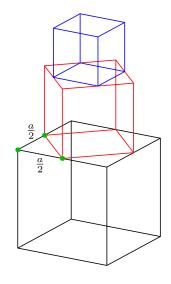
sedmi zadatak

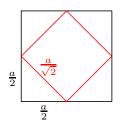


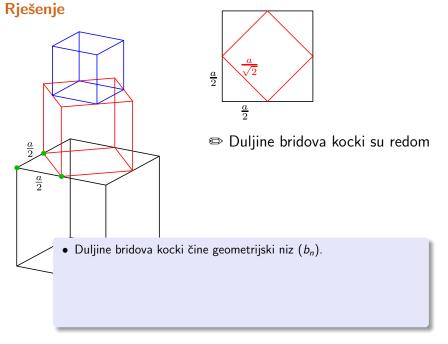
Na kocku duljine brida a postavi se nova kocka kojoj vrhovi donje osnovice leže u polovištima bridova gornje osnovice prve kocke. Na isti način se na drugu kocku postavi treća kocka, na treću kocku četvrta kocka itd. Odredite zbroj volumena svih ovih kocaka.

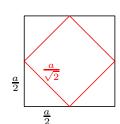




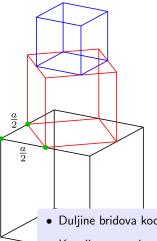


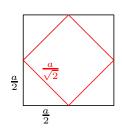




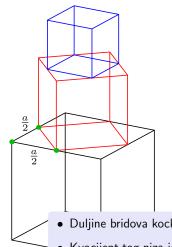


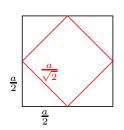
- Duljine bridova kocki čine geometrijski niz (b_n) .
- Kvocijent tog niza jednak je $q=\frac{1}{\sqrt{2}}$, a prvi član jednak je $b_1=a$.





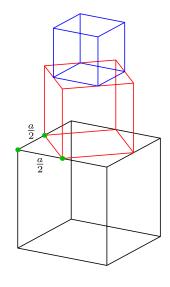
- Duljine bridova kocki čine geometrijski niz (b_n) .
- Kvocijent tog niza jednak je $q=\frac{1}{\sqrt{2}}$, a prvi član jednak je $b_1=a$.
- Dakle, $b_n = a \cdot \left(\frac{1}{\sqrt{2}}\right)^{n-1}$.

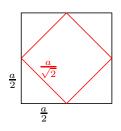




$$a, \frac{a}{\sqrt{2}}, \frac{a}{2}, \frac{a}{2\sqrt{2}}, \frac{a}{4}, \dots$$

- Duljine bridova kocki čine geometrijski niz (b_n) .
- Kvocijent tog niza jednak je $q=\frac{1}{\sqrt{2}}$, a prvi član jednak je $b_1=a$.
- Dakle, $b_n = a \cdot \left(\frac{1}{\sqrt{2}}\right)^{n-1}$.

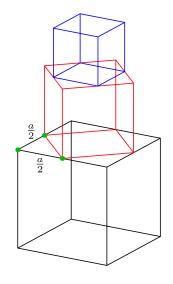


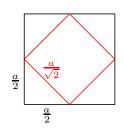


Duljine bridova kocki su redom

$$a, \frac{a}{\sqrt{2}}, \frac{a}{2}, \frac{a}{2\sqrt{2}}, \frac{a}{4}, \dots$$

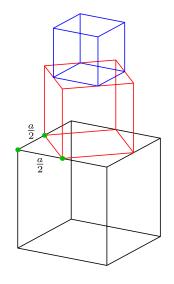
Volumeni kocki su redom

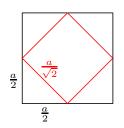




- Duljine bridova kocki su redom
 - $a, \frac{a}{\sqrt{2}}, \frac{a}{2}, \frac{a}{2\sqrt{2}}, \frac{a}{4}, \dots$
- Volumeni kocki su redom

Volumen kocke duljine brida a jednak je $V = a^3$.





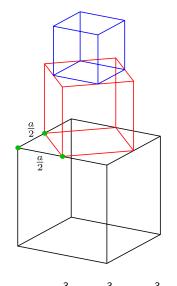
Duljine bridova kocki su redom

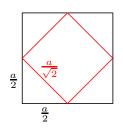
$$a, \frac{a}{\sqrt{2}}, \frac{a}{2}, \frac{a}{2\sqrt{2}}, \frac{a}{4}, \dots$$

Volumeni kocki su redom

$$a^3$$
, $\frac{a^3}{2\sqrt{2}}$, $\frac{a^3}{8}$, $\frac{a^3}{16\sqrt{2}}$, $\frac{a^3}{64}$, ...

Volumen kocke duljine brida a jednak je $V = a^3$.

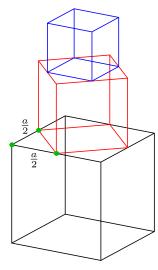


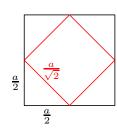


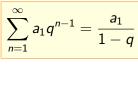
- Duljine bridova kocki su redom
 - $a, \frac{a}{\sqrt{2}}, \frac{a}{2}, \frac{a}{2\sqrt{2}}, \frac{a}{4}, \dots$
- Volumeni kocki su redom

$$a^3, \frac{a^3}{2\sqrt{2}}, \frac{a^3}{8}, \frac{a^3}{16\sqrt{2}}, \frac{a^3}{64}, \dots$$

$$a^3 + \frac{a^3}{2\sqrt{2}} + \frac{a^3}{8} + \frac{a^3}{16\sqrt{2}} + \frac{a^3}{64} + \dots = 0$$



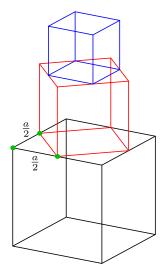


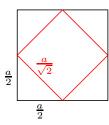


$$a, \frac{a}{\sqrt{2}}, \frac{a}{2}, \frac{a}{2\sqrt{2}}, \frac{a}{4}, \dots$$

$$a^3, \frac{a^3}{2\sqrt{2}}, \frac{a^3}{8}, \frac{a^3}{16\sqrt{2}}, \frac{a^3}{64}, \dots$$

$$a^3 + \frac{a^3}{2\sqrt{2}} + \frac{a^3}{8} + \frac{a^3}{16\sqrt{2}} + \frac{a^3}{64} + \dots = 0$$





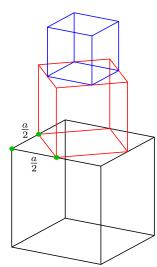


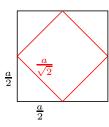
$\sum_{n=1}^{\infty} a_1 q^{n-1} = \frac{a_1}{1-q}$
$a_1 = a^3, \ q = \frac{1}{2\sqrt{2}}$

$$a, \frac{a}{\sqrt{2}}, \frac{a}{2}, \frac{a}{2\sqrt{2}}, \frac{a}{4}, \dots$$

$$a^3, \frac{a^3}{2\sqrt{2}}, \frac{a^3}{8}, \frac{a^3}{16\sqrt{2}}, \frac{a^3}{64}, \dots$$

$$a^3 + \frac{a^3}{2\sqrt{2}} + \frac{a^3}{8} + \frac{a^3}{16\sqrt{2}} + \frac{a^3}{64} + \dots = 0$$







$$\sum_{n=1}^{\infty} a_1 q^{n-1} = \frac{a_1}{1-q}$$

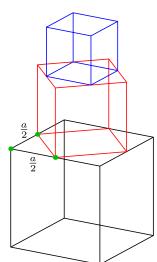
$$a_1 = a^3, \ q = \frac{1}{2\sqrt{2}}$$

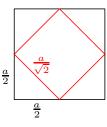
|q| < 1

$$a, \frac{a}{\sqrt{2}}, \frac{a}{2}, \frac{a}{2\sqrt{2}}, \frac{a}{4}, \dots$$

$$a^3, \frac{a^3}{2\sqrt{2}}, \frac{a^3}{8}, \frac{a^3}{16\sqrt{2}}, \frac{a^3}{64}, \dots$$

$$a^3 + \frac{a^3}{2\sqrt{2}} + \frac{a^3}{8} + \frac{a^3}{16\sqrt{2}} + \frac{a^3}{64} + \cdots =$$





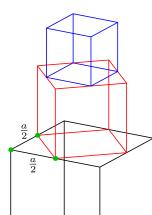


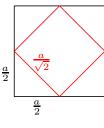
$\sum_{n=1}^{\infty} a_1 q^{n-1} = \frac{a_1}{1-q}$
$a_1 = a^3, \ q = rac{1}{2\sqrt{2}}$
q < 1

$$a, \ \frac{a}{\sqrt{2}}, \ \frac{a}{2}, \ \frac{a}{2\sqrt{2}}, \ \frac{a}{4}, \dots$$

$$a^3, \frac{a^3}{2\sqrt{2}}, \frac{a^3}{8}, \frac{a^3}{16\sqrt{2}}, \frac{a^3}{64}, \dots$$

$$a^{3} + \frac{a^{3}}{2\sqrt{2}} + \frac{a^{3}}{8} + \frac{a^{3}}{16\sqrt{2}} + \frac{a^{3}}{64} + \dots = \frac{a^{3}}{1 - \frac{1}{2\sqrt{2}}}$$







$$\sum_{n=1}^{\infty} a_1 q^{n-1} = \frac{a_1}{1-q}$$

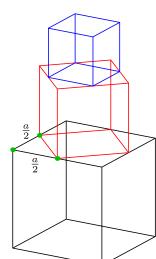
$$a_1 = a^3, \ q = \frac{1}{2\sqrt{2}}$$

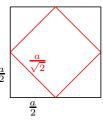
|q| < 1

$$a, \frac{a}{\sqrt{2}}, \frac{a}{2}, \frac{a}{2\sqrt{2}}, \frac{a}{4}, \dots$$

$$\frac{a^3}{1 - \frac{1}{2\sqrt{2}}} = \frac{a^3}{1 - \frac{1}{2\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}} = \frac{a^3}{1 - \frac{\sqrt{2}}{4}} = \frac{4a^3}{4 - \sqrt{2}} \left| \frac{a^3}{2\sqrt{2}}, \frac{a^3}{8}, \frac{a^3}{16\sqrt{2}}, \frac{a^3}{64}, \dots \right|$$

$$a^{3} + \frac{a^{3}}{2\sqrt{2}} + \frac{a^{3}}{8} + \frac{a^{3}}{16\sqrt{2}} + \frac{a^{3}}{64} + \dots = \frac{a^{3}}{1 - \frac{1}{2\sqrt{2}}} = \frac{4a^{3}}{4 - \sqrt{2}}$$







$$\sum_{n=1}^{\infty} a_1 q^{n-1} = \frac{a_1}{1-q}$$

Volumeni kocki su redom

$$a, \frac{a}{\sqrt{2}}, \frac{a}{2}, \frac{a}{2\sqrt{2}}, \frac{a}{4}, \dots$$

$$a, \frac{a}{\sqrt{2}},$$

 $a^3 + \frac{a^3}{2\sqrt{2}} + \frac{a^3}{8} + \frac{a^3}{16\sqrt{2}} + \frac{a^3}{64} + \dots = \frac{a^3}{1 - \frac{1}{2\sqrt{2}}} = \frac{4a^3}{4 - \sqrt{2}}$

/olumeni kocki su redom
$$a^3, \frac{a^3}{2\sqrt{2}}, \frac{a^3}{8}, \frac{a^3}{16\sqrt{2}}, \frac{a^3}{64}, \dots$$

$$\frac{a}{2\sqrt{}}$$

$$\frac{a}{\sqrt{2}}$$

$$a_1 = a^3, \ q = rac{1}{2\sqrt{2}}, \ |q| < 1$$



43 / 43