Matemātika 1027 **2020. g. rudens**

Praktiskie darbi 19

9. novembris

1. **Iesildīšanās:** Izlemiet, vai sekojošie apgalvojumi ir patiesi vai aplami.

   (a) Virkne $(\frac{1}{n})_{n=1}^{\infty}$ konverģē

   (b) Rinda $\displaystyle\sum_{n=1}^{\infty}\frac{1}{n}$ konverģē.

   (c) Ja rinda $\displaystyle\sum_{n=0}^{\infty}a_n$ konverģē un $a_n \xrightarrow{n\to\infty} a$, tad $a=0$.

   (d) Ja virknes $(a_n)_{n=1}^{\infty}$ robeža ir 0, tad $\displaystyle\sum_{n=0}^{\infty}a_n$ konverģē.

2. Vai sekojošās rindas konverģē vai diverģē? Ja konverģē, atrodiet tās vērtību.

   (a) $\displaystyle\frac{1}{10}+\frac{3}{20}+\frac{9}{40}+\frac{27}{80}+\frac{81}{160}+\cdots$

   (b) $\displaystyle\sum_{n=0}^{\infty}\left(\frac{1}{3}\right)^n 2^{2-3n}$

   (c) $\displaystyle\sum_{n=0}^{\infty}(-1)^n e^{3-n}2^{n+1}-\left(\frac{2}{3}\right)^{2n}$

   (d) $\displaystyle\sum_{n=0}^{\infty}(-1)^n\left(\frac{2}{3}\right)^{2n}+\frac{3\cdot 8^n}{81^{n/2}}$

   (e) $\displaystyle\frac{3}{4}+\frac{1}{4}+\frac{1}{12}+\frac{1}{36}+\frac{1}{108}+\cdots$

   (f) $\displaystyle\sum_{n=1}^{\infty}\left(\frac{1}{n}-\frac{1}{n+3}\right)$

3. Izmantojot pazīmes izlemiet, vai sekojošās rindas konverģē vai diverģē.

   (a) $\displaystyle\sum_{n=1}^{\infty}\frac{n+1}{n}$

   (b) $\displaystyle\sum_{n=1}^{\infty}\frac{n+1}{n^3}$

   (c) $\displaystyle\sum_{n=1}^{\infty}\frac{1}{2+\sqrt{3n}}$

   (d) $\displaystyle\sum_{n=1}^{\infty}\frac{1}{2+3^n}$

4. Izmantojot ģeometriskas virknes pierādiet, ka:

   (a) $0.99999\ldots\ldots = 1$

   (b) $0.5555555\ldots\ldots = 5/9$

   (c) $1.36363636\ldots. = 15/11$