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Exercise Sheet no.4

Analysis for CS

GROUPWORK:

(G 12)

Compute the sum of the following series, indicating in each case the results you are using.

a) $\sum_{n\geq 1} \frac{1}{\sqrt[3]{n}}$ b) $\sum_{n\geq 1} \frac{3}{4^n}$, c) $\sum_{n\geq 2} \frac{1}{3^{n-1}}$, d) $\sum_{n\geq 1} \frac{1}{4n^2-1}$, e) $\sum_{n\geq 1} \frac{2n+1}{n!}$,

f) $\sum_{n\geq 1} \frac{1}{\sqrt{n}+\sqrt{n+1}}$, g) $\sum_{n\geq 1} \frac{1}{n(n+1)(n+2)}$, h) $\sum_{n\geq 0} \frac{1}{n!+(n+1)!}$.

HOMEWORK:

(H 13) (To be delivered in the next exercise-class)

Compute the sum of the following series, indicating in each case the results you are using.

a) $\sum_{n\geq 0} \frac{(-3)^n}{4^n}$, b) $\sum_{n\geq 1} \frac{1}{\sqrt[5]{n}}$, c) $\sum_{n\geq 2} \ln\left(1-\frac{1}{n^2}\right)$, d) $\sum_{n\geq 0} \left(-\frac{2}{(n+1)!}+\frac{(-1)^{n+1}}{3^{n+2}}\right)$.

(H 14)

Compute the sum of the following telescopic series

a) $\sum_{n\geq 1} \frac{n}{(n+1)(n+2)(n+3)}$, b) $\sum_{n\geq 2} \frac{\ln\left(1+\frac{1}{n}\right)}{\ln\left(n^{\ln(n+1)}\right)}$.