Series (Geometric and Telescoping) Groupwork

MATH 131: Calculus II, Section 2
November 16, 2018

Find the sums of the following series or determine that they do not exist. Remember to watch out for the index and the form of the summand! Discuss within your group whether or not you can determine multiple approaches for solving these sums!

(1) $\displaystyle\sum_{n=0}^{\infty} 5\left(-\frac{1}{2}\right)^{n+2}$

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

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

(4) $\displaystyle\sum_{k=1}^{\infty} \ln\left(\frac{k+1}{k}\right)$

(5) $\displaystyle\sum_{k=0}^{\infty} \left(\frac{8}{k^2+4k+3}\right)$

(6) Express the repeating decimal $0.12\overline{34}$ as a ratio of integers.

(7) Express the repeating decimal $0.4\overline{283}$ as a ratio of integers.