For the series $\displaystyle\sum_{n=1}^{\infty} 5\ln\left(\frac{n}{n+1}\right)$,

$s_n = (5\ln 1 - 5\ln 2) + (5\ln 2 - 5\ln 3) + (5\ln 3 - 5\ln 4) + \cdots + [5\ln n - 5\ln(n+1)] = 5\ln 1 - 5\ln(n+1) = -5\ln(n+1)$

[telescoping series]

Thus, $\displaystyle\lim_{n\to\infty} s_n = -\infty$, so the series is divergent.