Worksheet #9

Determine convergence or divergence of the series. Indicate which test you used.

(1) $\displaystyle\sum_{n=1}^{\infty} \frac{n!}{n^{100}}$

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

(3) $\displaystyle\frac{\ln 2}{2^3} + \frac{\ln 3}{3^3} + \frac{\ln 4}{4^3} + \cdots$

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

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