1. Use the ratio test to decide whether the following alternating series convergence absolutely, converge conditionally, or diverge:

   (a) $\displaystyle\sum_{k=12}^{\infty} \frac{(-10)^k}{k!}$

   (b) $\displaystyle\sum_{n=1}^{\infty} \frac{(-2)^n}{n^{50}}$

2. Determine the convergence or divergence of

   (a) $\displaystyle\sum_{j=0}^{\infty} \frac{j!}{(j+2)!}$

   (b) $\displaystyle\sum_{n=0}^{\infty} \frac{n^3}{n!}$

   (c) $\displaystyle\sum_{k=5}^{\infty} \frac{k^4 + 400k^3}{1000k^4 + k}$

3. Determine the absolute convergence, conditional convergence, or divergence of:

   (a) $\displaystyle\sum_{j=1}^{\infty} \frac{(-1)^j}{j + e^j}$

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

   (c) $\displaystyle\sum_{m=2}^{\infty} \frac{(-1)^m m}{(m^2 - 1)^5}$