1. Use the Comparison test to determine if the series converges or diverges. Justify your answer.

\[ \sum_{k=1}^{\infty} \frac{1}{k + 2e^k} \]

2. Use the Ratio test to determine if the series converges or diverges. Justify your answer.

\[ \sum_{n=1}^{\infty} \frac{n^2}{2n+1} \]