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

\[
\sum_{k=0}^{\infty} \frac{2}{3 + 2e^k}
\]

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

\[
\sum_{n=0}^{\infty} \frac{n + 1}{2^n}
\]