You will have twenty minutes to take this quiz. Read the instructions carefully. There are more questions on the back of this page.

**1. (4 points)** You do not need to show your work. Only the answer will be graded.
For each of the following, circle true or false:

\[
\lim_{n \to \infty} \frac{2 - n + 5n^2}{n^2 - n + 6} = 0 \quad \text{True} \quad \text{False}
\]

\[
\lim_{n \to \infty} \frac{5^n + 2n + 1}{100n^2 + 6^n - 2} = 0 \quad \text{True} \quad \text{False}
\]

\[
\lim_{n \to \infty} \sum_{k=1}^{n} \frac{1}{k!} \text{ exists and is finite.} \quad \text{True} \quad \text{False}
\]

\[
\lim_{n \to \infty} \sum_{k=1}^{n} (-1)^k \text{ exists and is finite.} \quad \text{True} \quad \text{False}
\]
2. (6 points) Show your work. Partial credit may be awarded.

Find a bound on $R_n e^x$ which is valid for $x$ satisfying $-1 \leq x \leq 0$ and use this to show that

\[ e^{-1} = \sum_{k=0}^{\infty} \frac{(-1)^k}{k!}. \]