Math 143 Quiz 1

Names: _____

1. Find the degree 3 Taylor poly at $x = 0$ for a function that satisfies $f(0) = 1$ and $f'(x) = f(x)^2 + x$.

2. How big should n be to ensure that the error in the approximation

$$e^{-1} \approx 1 - \frac{1}{1!} + \frac{1}{2!} - \frac{1}{3!} + \cdots + \frac{(-1)^n}{n!}$$

is at most $1/100$?

3. Simplify these sums: $\displaystyle\sum_{n=1}^{\infty} \frac{(\sqrt{2})^{n-2}}{2^n}$ and $\displaystyle\sum_{n=2}^{\infty} \frac{1^n - 2^n + 3^n}{4^n}$.

4. Find the degree n Taylor polynomial for $\ln x$ at $x = 1$. (Write the answer using Σ notation.)