Math 143 Quiz 1

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

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

is at most 1/100?

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

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