Math 1B: Discussion 3/14/19

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Question 1

For what values of x do the following power series converge?

$$\sum_{n=1}^{\infty}(-1)^{n-1}\frac{x^n}{n}$$

$$\sum_{n=0}^{\infty}(-1)^{n}\frac{x^{2n+1}}{(2n+1)!}$$

$$\sum_{n=1}^{\infty}(-1)^{n}\frac{x^{2n+1}}{(2n+1)!}$$

$$\sum_{n=1}^{\infty}\left(\frac{3n}{n+4}\right)^n x^n$$

Question 2

Define the following power series

$$f(x)=\sum_{n=0}^{\infty}\frac{x^n}{n!}$$

- Write out a few terms of the infinite sum.
- Find the values of x for which $f(x)$ converges.
- Write $f'(x)$ as a power series.
- Write $\int_0^x f(t)dt$ as a power series.
- Use the previous two parts to make a guess as to what function $f(x)$ is.