Math 182 Honors Quiz 12 Version A

1. Write down the Taylor series for the following functions:

(i) e^x

(ii) $\sin x$

(iii) $\cos x$

(iv) $\arctan x$

(v) $\ln(1+x)$

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2. $\dfrac{d}{dx}|x+1|^x$

3. $\displaystyle\int_0^4 \left|x^2 - 4\right| dx$

4. Explain which of the following series converge and which diverge:

$$\textbf{(i)} \quad \sum_{n=1}^{\infty} \frac{\sqrt{n}}{n^2 + 1}$$

$$\textbf{(ii)} \quad \sum_{n=1}^{\infty} \frac{3^n}{n^3}$$