Math 253N ASSIGNMENT 10 **Due at the start of class Wednesday, May 3rd**

Do all work on additional paper. Consider the series $\sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{\sqrt{n^2+1}}$.

1. Starting with $n+1 \geq n$ and **working downward**, show that $a_{n+1} \leq a_n$, where $a_n = \frac{1}{\sqrt{n^2+1}}$.
2. **Justifying each step**, show that $\lim_{n\to\infty} a_n = 0$.
3. Based on Exercises 1 and 2, what can we conclude about the given series?
4. Does the series converge absolutely? **Prove your answer** by comparing $\sum a_n$ with another series.
5. Does the series converge absolutely, conditionally, or not at all? State your answer in a brief sentence.

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