

## MAT 127: Calculus C

### Mini-Quiz:

*convergence/divergence of sequences/series*

**DO NOT TURN THIS PAGE OVER YET**

This mini-quiz is **for practice only**. It will not be graded or even collected.

On the next page, you will find 5 sequences and 5 series. You need to determine whether each of them converges and circle YES or NO, without justifying your answer (but keep a reason in mind). A similar problem on the final exam will contain a total of 5 sequences and series.

You have **10 minutes** to answer all 10 questions.

Taking about 10 minutes on the analogous, 5-question, problem on the final should be ok (this would be one point per minute, which is what you need to average). Thus, you are being asked to complete the mini-quiz at about 2 times the pace needed for the final exam; this is because you do not have other problems to deal with and are under less pressure. However, please do not rush through the analogous problem on the final.

Determine whether each of the following sequences or series converges or not. In each case, *clearly* circle either **YES** or **NO**, but not both.

(a) the sequence  $a_n = \frac{(-1)^{n-1}n}{n^2 + 1}$  **YES** **NO**

(b) the sequence  $a_n = 1 + \cos(2/n)$  **YES** **NO**

(c) the sequence  $a_n = n \cos n$  **YES** **NO**

(d) the sequence  $a_n = (-1)^n \frac{n}{n+1}$  **YES** **NO**

(e) the sequence  $a_n = \frac{\sin 2n}{1 + \sqrt{n}}$  **YES** **NO**

(f) the series  $\sum_{n=1}^{\infty} \frac{n}{\sqrt{n^2 + 1}}$  **YES** **NO**

(g) the series  $\sum_{n=1}^{\infty} \frac{4 + 3^n}{2^n}$  **YES** **NO**

(h) the series  $\sum_{n=1}^{\infty} \frac{7^n}{n!}$  **YES** **NO**

(i) the series  $\sum_{n=1}^{\infty} \frac{\sin n}{2^n}$  **YES** **NO**

(j) the series  $\sum_{n=1}^{\infty} (-1)^n \frac{n}{n^2 + 1}$  **YES** **NO**