

MAT 127: Calculus C

Mini-Quiz:

Computing sums of infinite 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 a problem containing four convergent infinite series. You are asked to explain why each of the series converges and to compute its sum.

You have **30 minutes** to complete the entire problem.

The analogous problem on the final will have only two parts. Taking about 20 minutes on it 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 a slightly higher pace than needed for the final exam.

Show that the following series are convergent and find their sums.

$$(a) \sum_{n=1}^{\infty} \frac{1}{n2^n}$$

$$(b) \sum_{n=1}^{\infty} \frac{n}{2^n}$$

$$(c) \sum_{n=0}^{\infty} \frac{(-1)^n \pi^{2n+1}}{4^{2n+1} (2n+1)!}$$

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