

MATH 311: Homework 11

Due: April 14, 2021

1. Upcoming office hours are Monday April 12 9-10 and Wednesday April 14 9-10.
2. Reminder that Midterm 2 is on Monday, April 12 during class and covers 3.1-4, 4.1-5 except for uniform continuity.
3. Read Sections 5.1-2 in Abbott.
4. Do exercises 4.4.8, 4.4.12 in Abbott.
5. Do exercise 4.5.2 in Abbott.
6. Prove that
 - There is some $x \in (0, \frac{\pi}{2})$ for which $x = \cos(x)$.
 - There is some $x \in (0, 1)$ with the property that $xe^x = 2$.

Remark: You can assume that $\cos x$, e^x are continuous functions on \mathbb{R} .

7. Prove the a polynomial function $p(x)$ of odd degree has at least one real root, that is, there is at least one $r \in \mathbb{R}$ such that $p(r) = 0$.