

Math 2142 Homework 6: Due Friday March 9

Problem 1. Let r be a fixed real number. Show that e^r is the limit of the sequence given by

$$a_n = \left(1 + \frac{r}{n}\right)^n$$

Problem 2. Do the following problems in Exercises 10.4 on page 382: 1, 2, 4, 6, 7.

Problem 3. Do the following problems from Exercises 10.9 in the textbook: 2, 3, 4, 5.

Problem 4. Do the following problems from Exercises 10.14 in the textbook: 1, 6, 7, 9.

Problem 5. Let $\{a_n\}$ be a sequence such that $\lim_{n \rightarrow \infty} a_n = A$. Prove that for any constant c , the sequence $\{ca_n\}$ has limit $\lim_{n \rightarrow \infty} ca_n = cA$. (You need to work with ε and N to do this proof. Remember that c could be negative!)

Practice Problems

The following problems from the book are excellent for practicing with sequences and series.

- Exercises 10.4: 1-18, 29.
- Exercises 10.9: 1-9.
- Exercises 10.14: 1-16.