

MTH 144: Study Guide for Exam 2



Instructions: Exam 2 is going to contain a mix of free response questions, fill in the blank and multiple choice questions. It will be on **Wednesday, March 12th during class time**. You will be allowed to use your own calculator. No Sharing of Calculators and no phone calculators!

In preparation for the exam, you may wish to do the following:

- Review the concepts learned in each section and as you go, **make a summary, formula sheet**. Even though you can't use it during the exam, this will help you while you study.
- Review the exercises used as examples during the lectures and in homeworks.
- Go over this Study Guide and make sure all the concepts/formulas look familiar and you know when/how to use them.
- Finally, **after you have studied**, take the practice exam. This assignment is not required. It is there for you to use as practice after you have studied. Do not use the Practice as your only preparation for the Exam; use it as a study tool.

Exam 2 will cover the following topics:

- Arithmetic and Geometric Sequences (Sections 8.2 and 8.3)
- Polynomial Functions (Sections 2.2, 2.3 and 2.5)
- Rational Functions (Sections 2.6 and 2.7)

These are covering notes from Day 6 to Day 11, and WebAssign Homeworks 6 through 10.

1. Arithmetic and Geometric sequences/series

- how to identify if a sequence is arithmetic.
- how to find the common difference d
- the formula for the general term a_n and the recursive formula

- how to solve problems given different information. Look at the examples in the notes and HWs
- how to find partial sums of arithmetic sequences

- how to identify if a sequence is geometric.
- how to find the common ratio r
- the formula for the general term a_n

- how to solve problems given different information. Look at the examples in the notes and HWs
- how to find partial sums of geometric sequences

- how to find infinite sums of geometric sequences (if they converge then to what or if they diverge)

2. Polynomial Functions

- how to identify polynomials, degree, coefficients, terms, end behavior, zeros(roots), x intercepts, y intercepts
- know how the graph is at zeros with different multiplicities
- how to do long division (dividend, divisor, quotient, remainder)

- know the Theorems (Remainder, Factor and Rational Zeros, Conjugate Pairs)

- how to get the factored form using possible rational zeros and/long division
- complex numbers and complex zeros
- how to completely factor a polynomial over the complex numbers

3. Rational Functions

- how to identify rational functions
- how to get
 - holes
 - vertical asymptotes
 - horizontal asymptotes
 - slant asymptotes
 - x and y intercepts
- how the graph behaves at the horizontal asymptotes and near the vertical asymptotes