# Final exam: Study guide

## General information

The final exam will be made available on Canvas on December 14, 2022. You will have until the midnight of December 15, 2022 to complete it. You can take it on Canvas using the SmarterProctoring feature ($5 fee applied), or at EOU's Testing Center or at an EOU Regional Center. It is a closed book and closed note exam. A non-graphing calculator is allowed. Scratch paper is allowed. The time limit is 90 minutes.

The exam has a *mandatory* section and a *bonus* section. The mandatory section has 11 multiple choice questions (2 points each) and 2 free response questions (5 points each), constituting 27% of the total course credit (as written in the syllabus). Because of that, the exam will be on the scale of 32. The bonus section has 4 multiple choice questions (2 points each), adding to directly to the credit of the final exam. For example, if you get 9 out of 11 mandatory questions correct, 9 out of 10 points from the free response questions, and 2 out of 4 bonus questions correct, you will get 31/32. The bonus problems and the overflown points from the bonus midterm exam (if you have any) will be counted toward your final exam score, but will not make it exceed 32/32.

The mandatory problems cover Section 2.1, 2.2, 2.3, 3.2, 3.3 of the textbook. The bonus problems may ask you anything from the beginning of the course.

## Review

For the mandatory section, you should review the last 4 homework sets (HW 5, 6, 7, 8) and read the examples in the textbook.

- Section 2.1: write equation of a line given a point it contains and the slope, or given two points it contains. Find $x$, $y$-intercepts of a given line. Write an equation from a word problem.

- Section 2.2: graph, find $x$, $y$-intercepts, solve equations involving absolute value functions.

- Section 2.3: graph, find $x$, $y$-intercepts, minimum, maximum values of quadratic functions.

- Section 3.2: polynomial long division, synthetic division

- Section 3.3: use the Rational Roots test (also called Rational Zeros theorem in the textbook) to guess roots of a polynomial. Factor a polynomial using the factor theorem (Theorem 3.6).

For the bonus section, you should review the midterm exam and the bonus midterm exam.

## Additional problems to practice

- Problems 2, 5, 14, 26, 33 page 183.

- Problem 3 page 200, and 23 page 201.

- Problem 6, 9, 21 page 265. For Problem 9 and 21, try to use the synthetic division.

- Problem 13 and 19 page 280. Use the Rational Roots test (i.e. the Rational Zero theorem) to guess the rational roots. Then use synthetic division to factor the polynomial.