

Study Guide for Exam CH 6 with 4.4

The best way to prepare for this exam is to do lots of problems. Your MLP site has a practice exam and you can work this as many times as you like. You should work it until you can do all problems easily. The practice exam has more problems (30) than the real thing.

Be sure to review the material in the handbook as well, especially the Graphs of Polynomials (pp. 172-175 in the Handbook) and zeros of polynomial functions (pp. 189-190 in Handbook). The handbook contains many worked examples for these topics.

Here are the main topics in each section of the textbook:

Section 6.1 Higher degree polynomial functions

- Given the graph of a polynomial function, be able to determine whether its degree is even or odd and whether the leading coefficient is positive or negative (like #5 – 10 on p. 424-5 in the text).
- Be able to identify end behavior of a graph of a polynomial, if given its function formula. The formula may be in expanded form (like # 11 – 18 on pp. 425-26) or factored form (like # 19, 20 on p. 426).
- Given a polynomial function formula in factored form, be able to determine whether a graph crosses or touches the x-axis at each zero WITHOUT the use of a graphing calculator (like #27 – 35 and 43 – 45 on p. 175 in the Handbook).

Section 6.2 Modeling with Cubic and Quartic functions

- Given a table of data, be able to use third or fourth differences to determine whether or not the data could be represented perfectly by a cubic or quartic function model (like #13 on p. 437).
- Given a real world data set, use the regression feature of your calculator to create an appropriate regression model. Be sure you round to the indicated decimal place. (See # 17, 19, 20 on p. 438 – 39 in the text.)
- Use the regression model to make predictions; find and interpret function values

Section 6.3 Solutions of Polynomial Equations

- Be able to write a cubic function expressing the volume of a box to be made out of a square piece of cardboard (like #39 on p. 452)
- Be able to solve a polynomial equation by factoring, factoring by grouping, and the root method. (See # 5 – 18 on p. 451.)
- Be able to solve a polynomial equation in context, like those on pp. 452-53 (esp. #33- 36, 39- 42)

Section 6.4 Polynomial Equations Continued

- Be able to use synthetic division to divide a polynomial by a linear factor. Give quotient and remainder (like 1-4 on p. 463 in text).
- Use synthetic division to determine whether a given number is a solution to a given polynomial equation (like 5, 6 on p. 463 in text).
- Use synthetic division to determine whether or not a linear binomial is a factor of a given polynomial (like #7 – 8 on p. 463).
- Explain how you can use synthetic division to find function values. Explain why this works.
- Given a polynomial function with integer coefficients, name all the possible rational zeros (like # 17 – 20 on p. 464).
- Find all rational or real zeros of a polynomial function of degree 3 or 4 (like # 21 – 25, 27 on p. 464). You must SHOW ALL STEPS to receive full credit: list possible rational zeros, show synthetic division, show the new factored form every time a zero is found, list all zeros and factors.
- Be able to solve a higher degree polynomial equation in context, if given one solution (like #31, 32, 35, 36 on p. 464 - 65 in text.)

Section 4.4 Additional Equations and Inequalities

- Be able to solve a quadratic inequality using a sign chart (like #13 – 25 on p. 297 in text).
- Be able to solve a quadratic inequality in context using a sign chart (like 44 – 46 on p. 299).

Section 6.6 Polynomial Inequalities

- Be able to solve a polynomial inequality using a sign chart (like #29 -32 on p. 195 in handbook)
- Be able to solve a polynomial inequality in context, using a sign chart (like #21 – 25 on p. 484)