

College of the Redwoods  
Mathematics Department

Math 120 — Intermediate Algebra  
Exam #5A

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## Quiz Questions

**Read Carefully!** You have until Friday (11/16/07) to complete the quiz. The quiz is due at the beginning of class on Friday (11/16/07). Late quizzes are not accepted.

This quiz is open notes, open book. This includes any supplementary texts or online documents. You must answer all of the exercises on your own. You are not allowed to work in groups or pairs on the quiz. You are not allowed to enlist the aid of a tutor or friend to help with the quiz. You are not allowed to read the exercises in the quiz, then seek help on similar questions. Once you open the quiz and read the questions, you may not seek any outside help of any kind.

I am not interested in reading pages and pages of calculations without accompanying narrative. It is essential that you include sound mathematical writing that both explains and justifies your solution or proof. Grammar and punctuation are important, as is the organization of your solution on the written page.

When working in the Mathlab, please do not work next to any other student who is also working on the quiz. For the sake of propriety, please separate yourselves when working on the quiz in the Mathlab.

Place the solution to each exercise on a separate sheet of paper. On a good sheet of paper, write out (longhand) and sign the following honor pledge.

I promise that all work found herein is my own. I have received no help from tutors, colleagues, or other teachers. I also promise that I have refrained from sharing my work and ideas with other students in the class. I have also honored all of the quiz constraints listed in the directions.

Arrange your solutions in order, place these quiz page(s) on top of your solutions, then place the honor pledge on top of the quiz as a cover sheet. Staple. Good luck!

EXERCISE 1. Consider the polynomial

$$p(x) = x^3 + x^2 - 16x - 16.$$

Perform each of the following tasks.

- Factor  $p(x)$  completely.
- State the zeros of  $p(x)$ .
- On graph paper, plot the  $x$ -intercepts, then use your knowledge of the end-behavior of the polynomial to sketch the graph of the polynomial. This should be done without the aid of a calculator. Please indicate the scale on the  $x$ -axis, but leave the  $y$ -axis unscaled.

EXERCISE 2. Consider the polynomial

$$p(x) = 2x^3 + 14x^2 - 16x.$$

Perform each of the following tasks.

- Factor  $p(x)$  completely.
- State the zeros of  $p(x)$ .
- On graph paper, plot the  $x$ -intercepts, then use your knowledge of the end-behavior of the polynomial to sketch the graph of the polynomial. This should be done without the aid of a calculator. Please indicate the scale on the  $x$ -axis, but leave the  $y$ -axis unscaled.

EXERCISE 3. Consider the polynomial

$$p(x) = -x^3 - 2x^2 + 43x - 40.$$

Perform each of the following tasks.

- (a) Use your graphing calculator to draw the graph of  $p(x)$ . Adjust the WINDOW parameters so that the  $x$ -intercepts and extrema of the polynomial are visible in the viewing window.
- (b) Copy the image in your viewing window onto your examination paper. Label and scale each axis with the WINDOW parameters.
- (c) Use the appropriate feature on your calculator to find the extrema of the polynomial. Label each extrema in your plot in part (b) with the coordinates indicated by your calculator. Please report all digits shown on your calculator.
- (d) Classify each extrema as either a local or absolute maximum or minimum. Indicate this on your graph from part (b).