

## Summary for Midterm One - Math 120

The core of your studying should be the assigned homework problems: make sure you really understand those well before moving on to other things (like the old midterms on the test archive).

- Chapter 1 - Warm Up
  - One of the most important ideas of this chapter is that of *multiplying by one* as a means of unit conversion. This idea makes all unit conversions have a common method, and helps one's notekeeping.
- Chapter 2 - Imposing Coordinates
  - This chapter introduced the use of the *coordinate system* and the *distance formula*.
  - A classic problem from this chapter is one in which two objects are moving and we need to describe the distance between them, like problems 2.3, and 2.10.
- Chapter 3 - Three Simple Curves
  - This chapter introduces circles and horizontal and vertical lines. You should be sure you are comfortable finding the equation of a circle from a variety of descriptions.
  - You should be able to find the intersection of a circle with a vertical or horizontal line.
- Chapter 4 - Linear Modeling
  - In this chapter, we get the general line definition. Be sure you are able to find the intersection of a given circle with a general line.
  - We also have the idea of perpendicular lines, and the method for finding the shortest distance between a line and a point not on that line. We also considered tangent lines to circles.
  - Uniform linear motion is introduced. See problems 4.13 and 4.14.
  - Especially good problems are 4.6, 4.7, 4.8, 4.10, 4.11.
- Chapter 5 - Functions and Graphs
  - Here the *function* is introduced.
  - Every function has a domain, range and graph. Be sure to know what each is, and how to determine it for a given function. As we said, finding the range and graph can be hard; rest assured, if asked to find the range or graph of a given function, it will be doable.
  - Given a function  $f(x)$ , you should be able to simplify expressions like

$$\frac{f(x + 2h) - f(x - 2h)}{h}.$$