MATH 1210 PreTest

The 1210 PreTest was designed as a tool to test your calculus readiness. It covered some topics and techniques that will be needed during the course of the semester.

If you did well on the assignment then that means that you will likely be able to comfortably do many of the algebra and trig manipulations that will be required. If you did not do so well, then you might very well need to brush up on some of these skills before encountering them in our class. You might also consider changing courses (to 1050 College Algebra, 1060 Trigonometry, or 1080 Precalculus) if you think that you need more extensive review.

It is important to remember that the purpose of the pretest was for self-assessment. You can still be successful in 1210 even if you did poorly on the pretest. The purpose of this document is to help you assess your performance and point you in the appropriate directions for resources. A student who is aware of what they need to work on and is willing to do the extra work is definitely a student that can be successful in 1210!

The problems on the pretest fall into a few main categories (some problems are in more than one category). As for the resources, Chapter 0 of our textbook is a brief precalculus review. I will also give links to the departmental videos for the prerequisite courses. The videos can be found here: http://www.math.utah.edu/lectures/index.php.

Line Equations - Problems 2, 3, & 4. The derivative will turn out to the be slope of a special line, the tangent line. So we will need to derive and manipulate line equations. You should understand slope and how to fine it and be comfortable with lines in slope-intercept form ($y = mx + b$) and point-slope form ($y - b = m(x - a)$).
Resources: textbook section 0.3, 1010 videos 2.1, 2.2, and 3.4

Factoring - Problems 5, 6, 7, & 8. We'll do a lot of analysis involving the sign of the derivative; often, that will start with factoring a polynomial or rational function. At a minimum, you should be very comfortable with factoring quadratic polynomials (and using the quadratic formula when necessary). Polynomials of higher degree are more difficult but we will encounter those less often.
Resources: 1010 videos 8ABCD, 1050 videos 6, 6.5

Simplifying - Problems 7, 8, 9, 10, & 21. Simplifying is a general term that usually involves factoring and algebraic manipulations. Sometimes we will obtain complicated expressions for derivatives and will need to do these manipulations to make our lives easier. This skill is fairly general and ubiquitous, so the resources tend to be less helpful.
Resources: 1010 videos Chapter 6

Exponents - Problems 11 & 12. Exponents and exponent rules will come up in evaluating and manipulating functions throughout the course.
Resources: 1010 video 5.1

Composition of Functions - Problems 13 & 14. Composition of functions comes up in the definition of the derivative; it is hard to understand the derivative and do the appropriate manipulations if you are unsure of what function composition is.
Resources: textbook section 0.6, 1050 video 4.

Trigonometry - Problems 15, 16, 17, & 18. We'll be working with trigonometric functions throughout the course. At a minimum, you need to know the basics: the definition of the trig functions (both from the unit circle and in terms of sides of a right triangle), basics about the graphs of $\sin x$, $\cos x$, and $\tan x$, and a few trig identities. Problem 18 was fairly tricky.
Resources: textbook section 0.7, 1060 videos 2-5.

Miscellaneous - Problems 19, 20, & 21. These are problems/topics that are perhaps not as essential to success in 1210 but will still come up at some point. Problem 19 is on sigma notation...we'll see that

in Chapter 4. Problem 20 is on exponential functions and the natural logarithm; that doesn't come up until Calculus II. The technique of partial fractions is used in Calculus II also.

Resources: 1050 videos 16-20, 27, 29 and 1010 video 9.5