

CALCULUS 131: MIDTERM 1 REVIEW SHEET

Besides what is listed below, any homework problem (except bonus problems) is also fair game.

Real Numbers and Logic: You should know the different kinds of numbers (natural numbers, integers, rational numbers and real numbers), and the symbols for their sets. You should know some examples of irrational numbers ($\sqrt{2}$ and π are good ones). You should know the definition of converse and contrapositive. Given an “if - then” statement, you should be able to find its converse and contrapositive; you should also know that the contrapositive is logically the same as the original statement, but that this is not necessarily true for the converse.

Inequalities and Absolute Values: You should be comfortable with interval notation, even involving unions (\cup). You should be able to solve inequalities involving linear functions (e.g. $x - 4 < 3$), quadratic functions (e.g. $x^2 + 3x < -2$), and absolute values (e.g. $|x + 3| > 2$). You should know and understand the properties of absolute values that I listed in class.

Cartesian Coordinate system: Learn the distance formula. Given a circle with center (h, k) and radius r , you should know how to find its equation. Conversely, given an equation of a circle, you should be able to find its center and radius. You should also be able to find the equation of a line given either its slope and a point on it, or two points on it.

Functions: You should be able to find the natural domain of a function. Given two functions, you should be able to find the natural domains and formulas for their sum, difference, product, quotient or composition ($f \circ g$). You should know the definition of even and odd functions, and be able to tell whether a given function is even, odd or neither. Finally, you should know the definitions of polynomial and rational functions.