MATH 121   Calculus and Analytic Geometry I   Fall 2004   Project #1

Instructions

   You should submit a carefully written report addressing the problems given below. You are encouraged to discuss ideas with others for this project. If you do work with others, you must still write your report independently.

   You should include enough detail so that a reader can follow your reasoning and reconstruct your work. You should not show every algebraic or arithmetic step. All graphs should be done carefully on graph paper or using appropriate technology.

   The project is due in class on Friday, September 10.

   For each of the following, describe the graph of the given function in as much detail as possible. You can use a combination of plots and words for this. Use the natural domain for each function.

1. $f(x) = \cos\left(\frac{1}{x}\right)$

2. $f(x) = \begin{cases} 1 & \text{if } x \text{ is rational} \\ -1 & \text{if } x \text{ is irrational} \end{cases}$