Math 241 X8 **Name(s):**

Homework 4 supplement

This is a written homework supplement to the homework for Unit 4: the Gradient.

Suppose we want to find the minimum and maximum values of $f(x, y) = (x-1)^2+y^2+3$ on the region R that is the disk $x^2 + y^2 \leq 2$.

(1) Start by sketching the region in question.

(2) Add to that sketch the sketch of several of the level curves of f. (Make sure to have level curves that have different relationships to R. Don't worry about the value f takes at these curves yet.)

(3) Find the maximum and minimum values of f on R. (You may want to complete electronic homework 4.4 before this.)

(4) On your graph, label the level curves of f that correspond to these maximum and minimum values.