Lecture 11: Review (some problems)

1. A flat circular plate has the shape of the region $x^2 + y^2 \leq 1$. The plate, including the boundary, is heated so that the temperature is $T(x, y) = x^2 + 2y^2 - x$. Find the temperatures at the hottest and coldest points on the plane.

2. Us the method of Lagrange multiplier to find the dimensions of the right circular cylindrical of greatest surface area that can be inscribed in the sphere $x^2 + y^2 + z^2 = 4$ with sides parallel to the coordinate axes.

3. Find the dimensions of the closed right circular cylindrical can of smallest surface area whose volume is 16π cm^3.

4. (Practice exam questions)