Homework Assignment for Week 10

1. Section 13.7: Problems 17, 35, 36, 37, 42, 45. Try to use the gradient analysis (i.e. sketch the gradient vectors to help you find the answer) in problem 37.

2. Section 13.8: Problems 7, 8, 25, 27, 29, 31. (Use the method of Lagrange Multipliers only).

3. (s13.7 extra1) Suppose that $f_x(x,y) = 3x^2 + 2x + 2y$ and $f_y(x,y) = 2x + 2y$. Does f has a local max, local min or a saddle point at $(0,0)$? Hint: try the gradient analysis.

4. (s13.8 extra1) Find the equation of plane normal to the curve

$$\begin{cases} x^2 + 2y^2 + 3z^2 = 6 \\ x + y + z = 3 \end{cases}$$

   at $(1,1,1)$.

   Hint: how is this plane related to the gradients of the two surfaces?