9th lesson

https://www2.karlin.mff.cuni.cz/~kuncova/en/teaching.php
kuncova@karlin.mff.cuni.cz

Theory

Exercises

1. Find and sketch the contourlines = levelsets:

   (a) $f(x,y) = 2x + 3y + 1$
   (b) $f(x,y) = x^2 + y^2$
   (c) $f(x,y) = \sqrt{x^2 + y^2}$
   (d) $f(x,y) = \sqrt{64 - x^2 - y^2}$
   (e) $f(x,y) = y^2 - x^2$
   (f) $f(x,y) = x^2 - y$
   (g) $f(x,y) = e^y - x^2$ (use a program)

2. Find and sketch the levelsurfaces:

   (a) $f(x,y,z) = x^2 + y^2 + z^2$
   (b) $f(x,y,z) = 4x^2 + y^2 + z^2$
   (c) $f(x,y,z) = x^2 + y^2$
   (d) $f(x,y,z) = z - y$

3. Describe the shape of the cross-sections:

   (a) $f(x,y) = x^2 + y^2$
   (b) $f(x,y) = x^2 - y^2$
   (c) $f(x,y) = (x-y)^2$
   (d) $f(x,y) = |x| + |y|$
   (e) $f(x,y) = e^{-(x^2+y^2)} \sin(x^2 + y^2)$ (use a program)
   (f) $f(x,y) = \sin(x - y)$