

Math 3113 - Multivariable Calculus

Homework #5 - 2008.02.25

Due Date - 2008.03.03

Name: _____

1. Sketch the domains of the following functions in the cartesian coordinate plane.

a)

$$z = \frac{\ln(-x + y) - \ln(6 + y)}{\sqrt{x - 3}}$$

b)

$$z = \sqrt{x + 4 + y}$$

c)

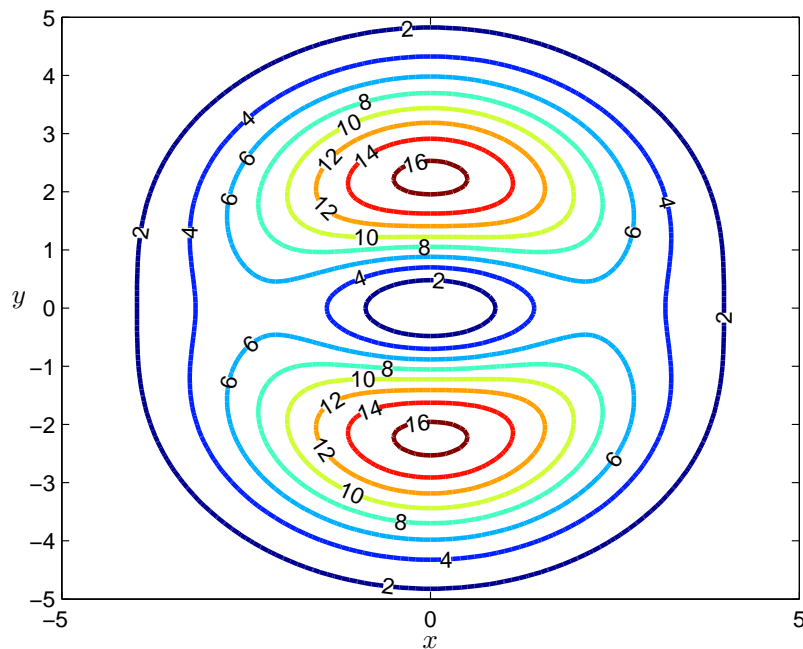
$$z = \frac{\ln(xy + 1)}{\sqrt{x + y}}$$

d)

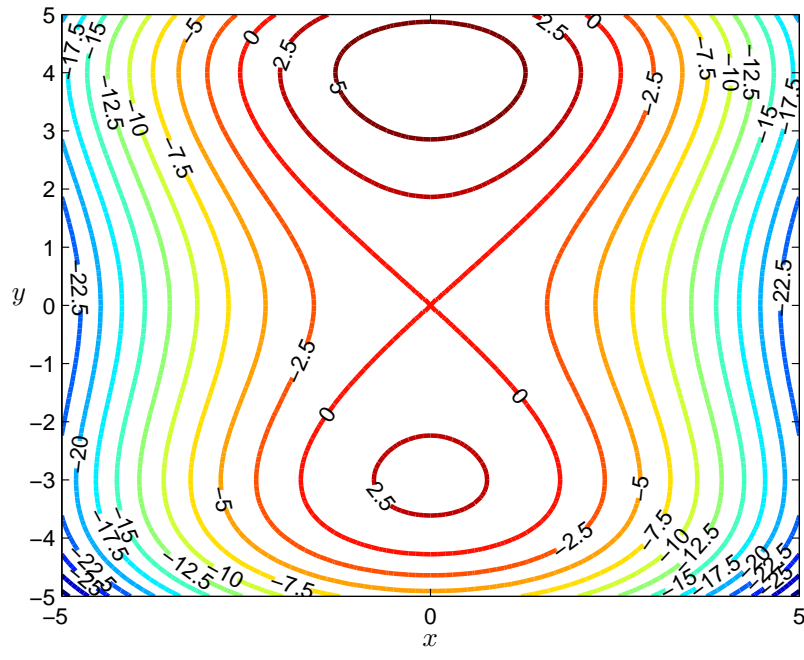
$$z = \sin^{-1}(x + y)$$

2. Sketch the graphs of the functions $z = f(x, y)$ whose level curves are given below.

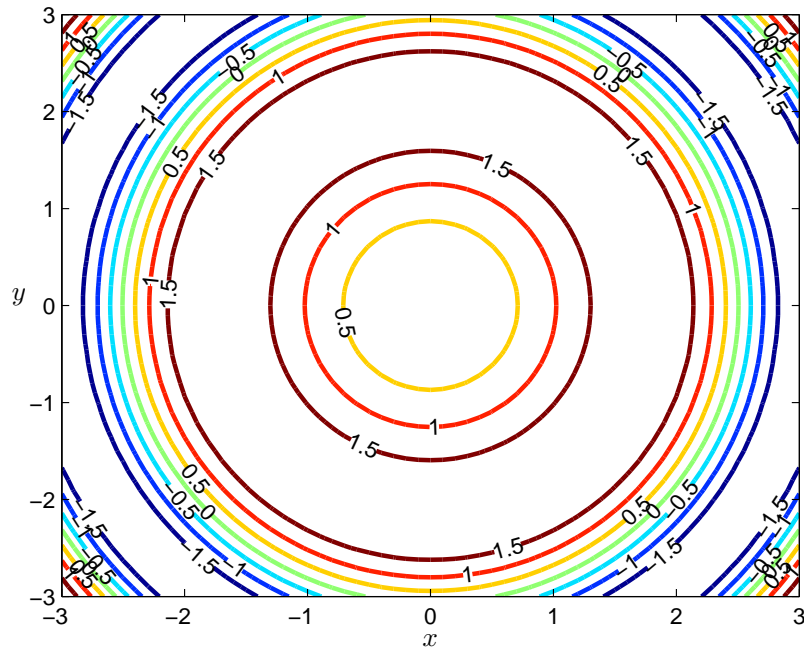
a)



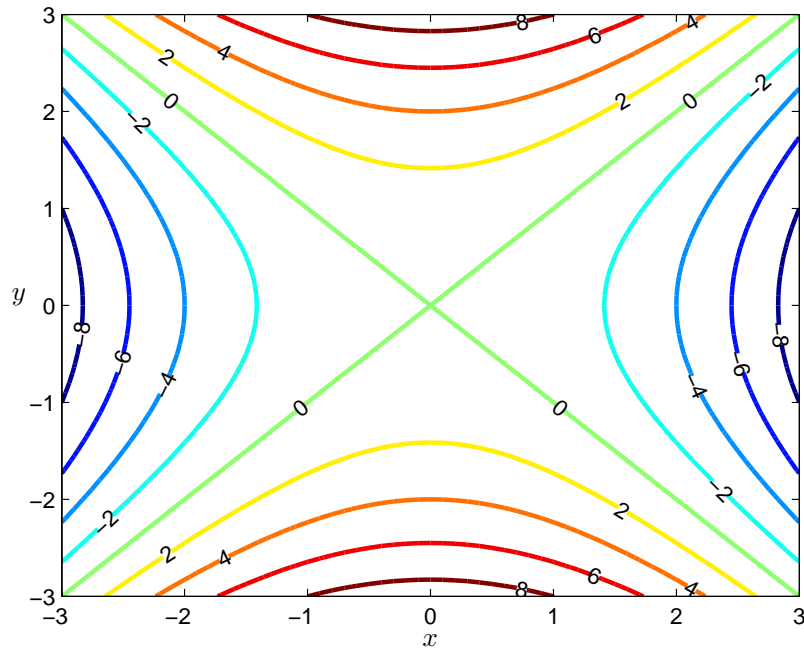
b)



c)



d)



3. Sketch some typical level curves of the following functions.

a) $z = y - x^2$

b) $z = y^2 - x$

c) $z = x^2 + y^2 - 4x$

d) $z = y^2 - x^3$

e) $z = 4x^2 - \frac{1}{9}y^2$

f) $z = \frac{1}{2}y - \cos(x)$