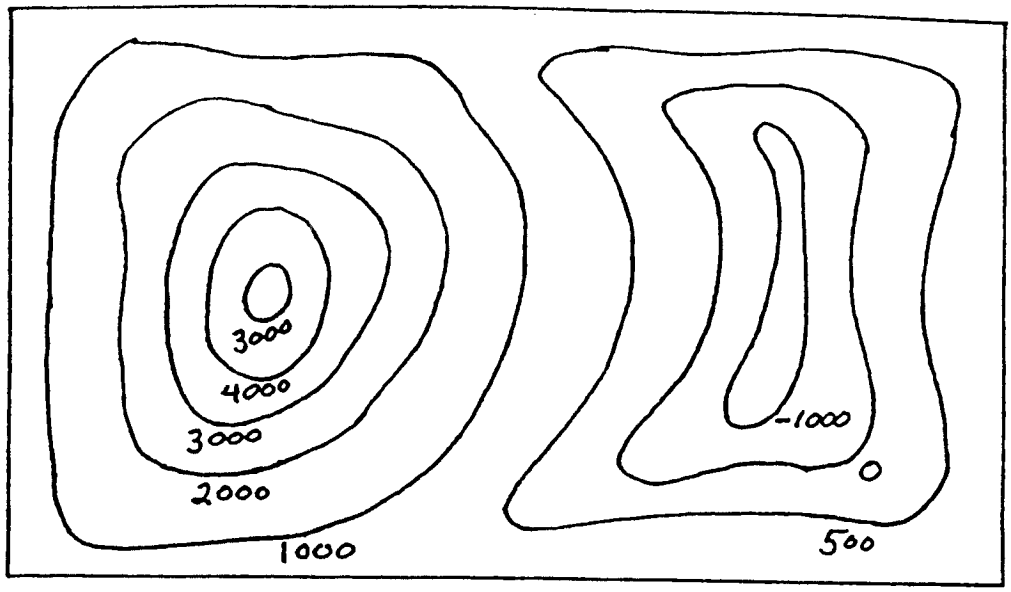
Math 17B (Kouba)

SKETCHING SURFACES IN THREE-SPACE USING LEVEL CURVES

RECALL : Topographical Map

Assume that the numbers represent height in feet relative to sea level of a particular region.



DEFINITION : The intersection of a horizontal plane at a particular height $z = c$ with a given surface is called a level curve.

EXAMPLE : Sketch the surface $z = x^2 + y$ using level curves.

Values for z	Level curves	
-3	$-3 = x^2 + y$	$y = -x^2 - 3$
-2	$-2 = x^2 + y$	$y = -x^2 - 2$
-1	$-1 = x^2 + y$	$y = -x^2 - 1$
0	$0 = x^2 + y$	$y = -x^2$
1	$1 = x^2 + y$	$y = -x^2 + 1$
2	$2 = x^2 + y$	$y = -x^2 + 2$
3	$3 = x^2 + y$	$y = -x^2 + 3$