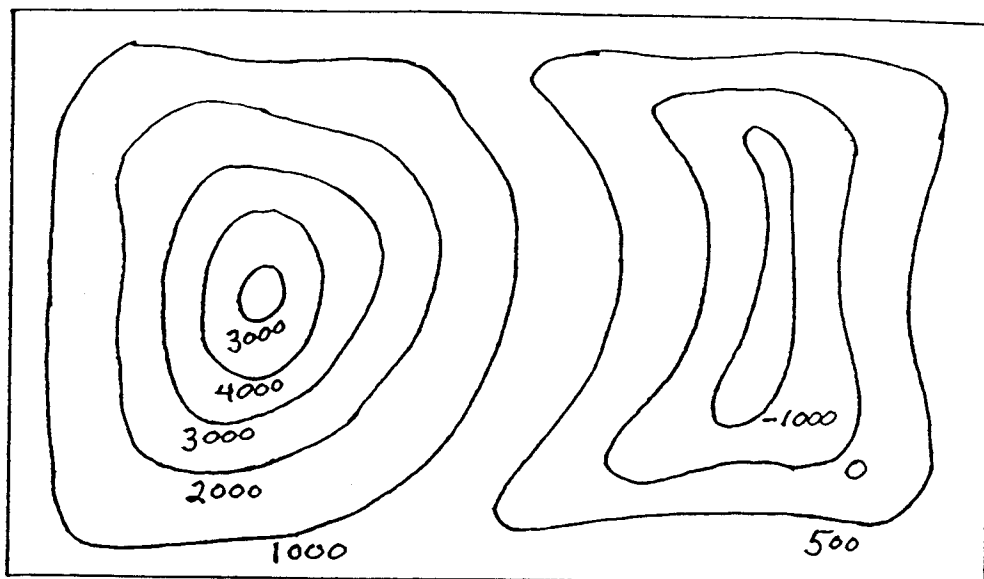


# SKETCHING SURFACES IN THREE-SPACE USING LEVEL CURVES

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	$3 = x^2 + y$ $y = -x^2 + 3$

