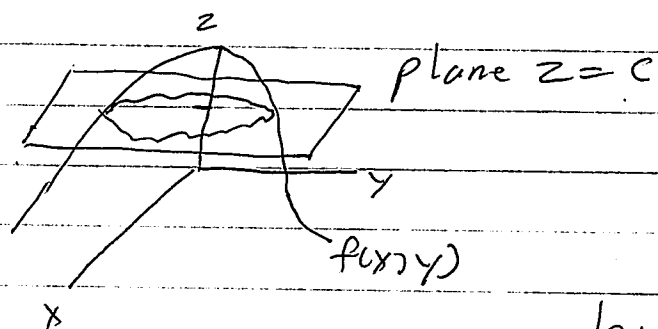


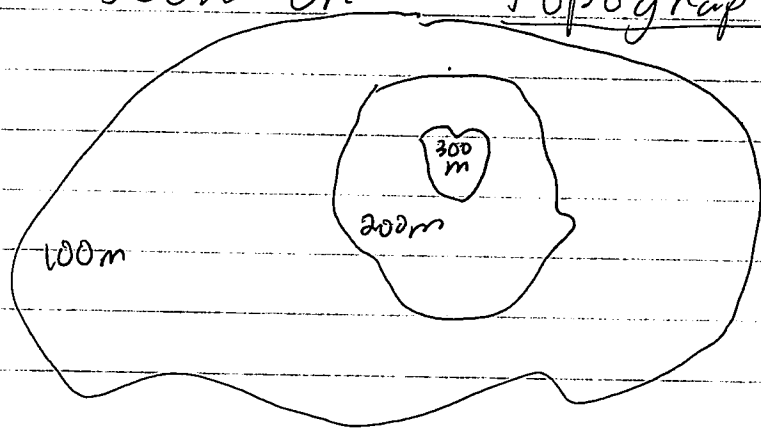
The level curves of a function  $f(x, y)$  with domain  $D \subset \mathbb{R}^2$  are the curves  $\{(x, y) \in D \mid f(x, y) = c\}$

where  $c$  is a constant, "the level",



level curve is  $\{(x, y, z) \mid z = c\}$   
 $\cap$  graph of  $f$ .

If  $f(x, y)$  represents elevation above sea level at location with coordinate  $(x, y)$ , then the level curves represent elevation as seen on topographic map



A level surface of a function  $f(x, y, z)$  with domain  $D \subset \mathbb{R}^3$  is a set of the form

$$S_c = \{ (x, y, z) \in D \mid f(x, y, z) = c \}$$

Ex.  $f(x, y, z) = x^2 + y^2 + z^2$  domain  $\mathbb{R}^3$

$$S_c = \begin{cases} \text{a sphere of radius } \sqrt{c} & c > 0 \\ \text{the point } \{ (0, 0, 0) \} & c = 0 \\ \text{empty} & c < 0 \end{cases}$$