

$$\text{TEMP} = T(\text{LONG.}, \text{LAT.})$$

$$\text{Vol of Circ. Cyl.} = V(r, h) = \pi r^2 h$$

Def: A FUNCTION OF 2 VARIABLES IS A RULE THAT ASSIGNS TO EACH ORDERED PAIR OF REAL NUMBERS  $(x, y)$  IN A SET  $D$  A UNIQUE REAL NUMBER DENOTED  $f(x, y)$ . THE SET  $D$  IS DOMAIN & THE SET OF VALUES  $f$  TAKES ON IS ITS RANGE, i.e.  $\{f(x, y) : (x, y) \in D\}$ .

ex. FIND DOMAIN  $f(x, y) = \sqrt{xy}$  ;  $f(\sqrt{6}, \sqrt{24})$

$$f(x, y) = \frac{\sqrt{y - 3x + 5}}{x^2 + 4}$$
 ;  $f(1, 2)$

$$f(x, y) = \arcsin(x^2 + y^2 - 2)$$

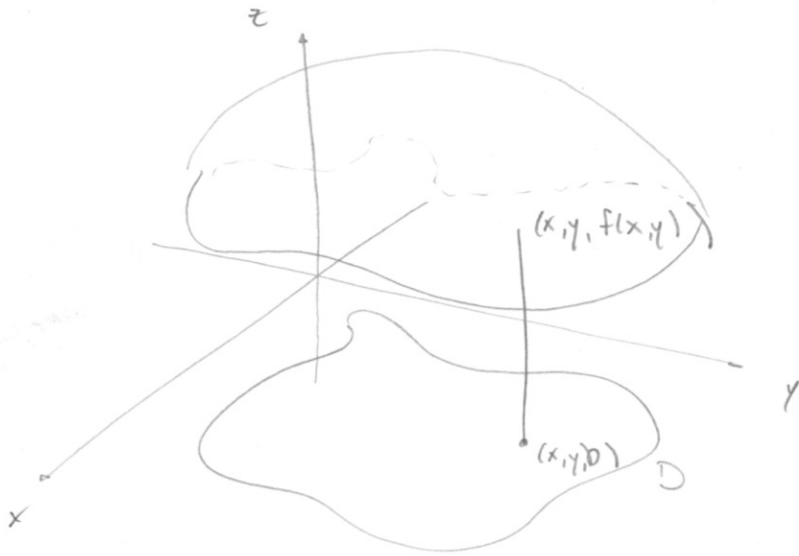
$$-1 \leq x^2 + y^2 - 2 \leq 1$$

$$2 \leq x^2 + y^2$$

$$x^2 + y^2 \leq 3$$

# GRAPHS

Def: GIVEN A FUNCTION  $f$  OF 2 VAR. WITH DOMAIN  $D$ ,  
ITS GRAPH IS THE SET OF ALL POINTS  $(x, y, z)$  IN  $\mathbb{R}^3$   
S.T.  $z = f(x, y)$  &  $(x, y) \in D$ .



LINEAR! SPECIAL IN CALC.

ex. SKETCH GRAPH OF  $f(x, y) = 5 - 4x - 3y$

DOM / RANGE ?

ex. SKETCH GRAPH OF  $f(x, y) = \sqrt{1 - x^2 - y^2}$

$$f(x, y) = c \sqrt{1 - x^2 - y^2}$$

Def:

THE LEVEL CURVES OF A FUNCTION  $f$  OF TWO VARIABLES ARE THE CURVES (IN  $x, y$  PLANE) WHERE  $f(x, y) = k$ , WHERE  $k$  IS A CONSTANT IN THE RANGE OF  $f$ .

COMPUTER - TEXTBOOK p. 625, 626 ex 6