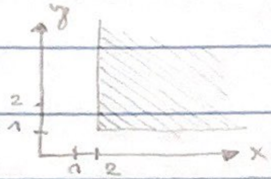
cálculo 2, stewart vol. 2, ed 8, cap 14.1

13 $f(x,y) = \sqrt{x-2} + \sqrt{y-1}$

$x - 2 \geq 0$ $\quad$ $y - 1 \geq 0$

$x \geq 2$ $\quad$ $y \geq 1$

$D = \{(x,y) \in \mathbb{R}^2 \mid x \geq 2,\ y \geq 1\}$



15 $f(x,y) = \ln(9 - x^2 - 9y^2)$

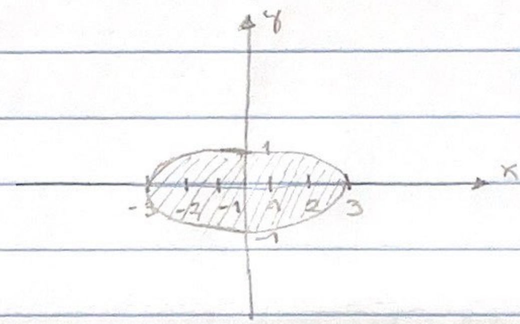
$D = \{(x,y) \in \mathbb{R} \mid \frac{x^2}{9} + \frac{y^2}{1} < 1\}$

$9 - x^2 - 9y^2 > 0$

$-x^2 - 9y^2 > -9$ $\quad (\cdot -1)$

$x^2 + 9y^2 < 9$ $\quad (\cdot \frac{1}{9})$

$\frac{x^2}{9} + \frac{y^2}{1} < 1$



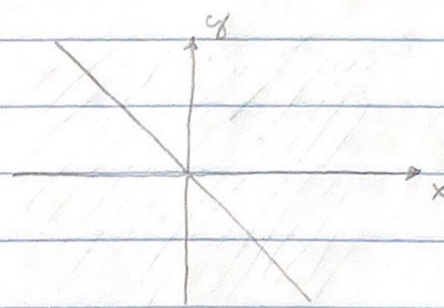
$a = 3$

$b = 1$

17 $g(x,y) = \frac{x-y}{x+y}$

$x + y \neq 0$ $\quad$ $x \neq -y$

$D = \{(x,y) \in \mathbb{R}^2 \mid x \neq -y\}$



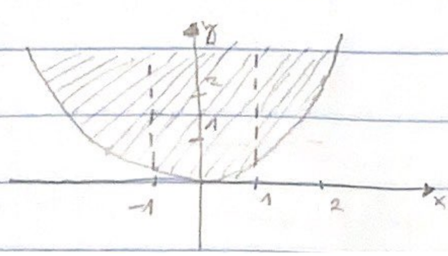
19 $f(x,y) = \frac{\sqrt{y - x^2}}{1 - x^2}$

$1 - x^2 \neq 0$ $\quad$ $1 \neq x^2$

$x \neq \pm 1$

$y - x^2 \geq 0$ $\quad$ $y \geq x^2$

$D = \{(x,y) \in \mathbb{R}^2 \mid y \geq x^2,\ x^2 \neq 1\}$



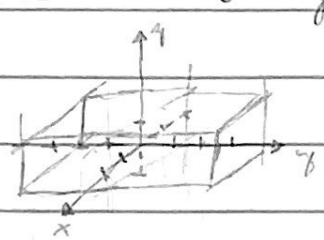
21 $f(x,y,z)=\sqrt{4-x^2}+\sqrt{9-y^2}+\sqrt{1-z^2}$

$4-x^2\geq 0$ $\quad 9-y^2\geq 0$ $\quad 1-z^2\geq 0$

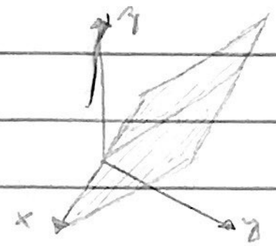
$4\geq x^2$ $\quad 9\geq y^2$ $\quad 1\geq z^2$

$x^2\leq 4$ $\quad y^2\leq 9$ $\quad z^2\leq 1$

$D\Rightarrow -2\leq x\leq 2$ $\quad -3\leq y\leq 3$ $\quad -1\leq z\leq 1$



23 $z=f(x,y)=y$



25 $z=f(x,y)=10-4x-5y$ $\quad \vec{n}$ do plano $=(-4,-5,-1)$

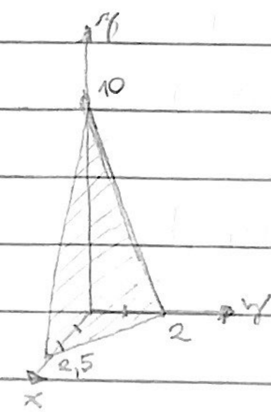
$z=10-4x-5y$

$-4x-5y-z+10=0$

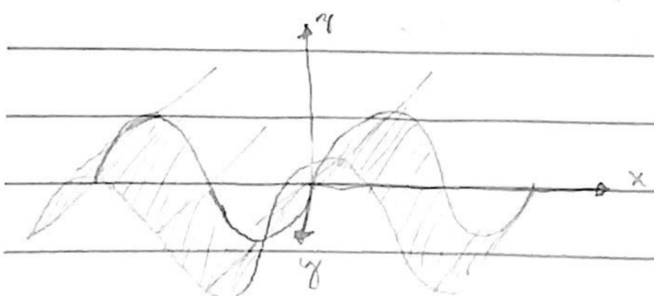
traços

$x=0\to$ $\quad -z+10=5y$ $\quad z=-5y+10$

$y=0\to$ $\quad -z+10=4x$ $\quad z=-4x+10$

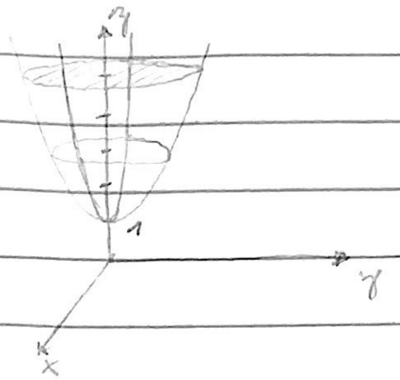


27 $f(x,y)=\text{sen}(x)$ é um superfície cilíndrica



29 $f(x,y) = x^2 + 4y^2 + 1$

$z = x^2 + 4y^2 + 1$



Traços:

$x = 0 \rightarrow z = 4y^2 + 1$

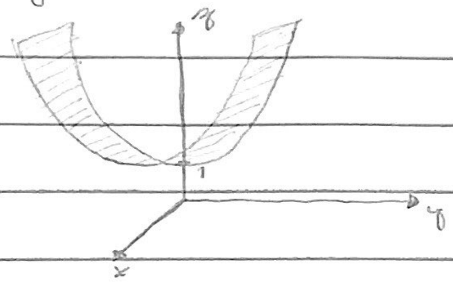
$y = 0 \rightarrow z = x^2 + 1$

em $z = 5 \rightarrow x^2 + 4y^2 + 1 = 5$

$x^2 + 4y^2 = 4$

$\frac{x^2}{4} + y^2 = 1$ elipse

31 $f(x,y) = y^2 + 1$ superfície cilíndrica



45 $f(x,y) = z = x^2 - y^2$ em $z = 0$, $x = y$ $x = -y$

$z = 1 \rightarrow x^2 - y^2 = 1$

$z = 2 \rightarrow \frac{x^2}{2} - \frac{y^2}{2} = 1$ $b = a = \sqrt{2}$

$z = -1 \rightarrow x^2 - y^2 = -1$

$y^2 - x^2 = 1$