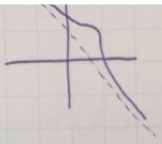
$y=(1-x^p)^{\frac{1}{p}}$ $y'=\frac{1}{p}(1-x^p)^{(\frac{1}{p}-1)}\cdot(-p)x^{(p-1)}$



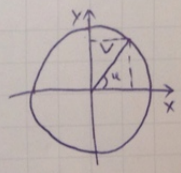
(a). $\nabla F=(px^{p-1}, py^{p-1})=0 \iff$ at $(0,0)$.

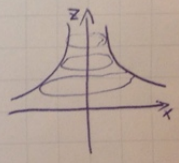
July 11.

P132/#3. $(u,v)\to(f_1(u,v), f_2(u,v), f_3(u,v))$.

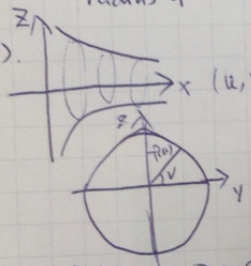
a). $(u,v)\to(v\cos u, v\sin u, f(v))$.

↑ radius of a cross section. u is angle.





b).



$(u,v)\to(u, f(u)\cos v, f(u)\sin v)$.

$\begin{cases} a_1x_0+a_2y+a_3z=c. \\ b_1x+b_2y+b_3z=d. \end{cases}$

$(a_1,a_2,a_3)\times(b_1,b_2,b_3)t+(c_1,c_2,c_3)$.

P133/4.(b).

① $\text{Det}(Df(a))\neq 0 \quad \forall a\in U$.

$(r,\theta)\quad r>0$

$\to(r\cos\theta, r\sin\theta)$

$\det\begin{pmatrix}\cos\theta & -r\sin\theta \\ \sin\theta & r\cos\theta\end{pmatrix}=r>0$.

$(u,v)=f(x,y)=(x-2y, 2x-y)$.

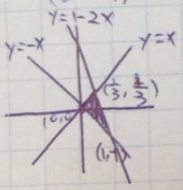
a) f^{-1}

b). Find image in uv-plane of triangle bounded by $y=x$. $y=-x$. $y=1-2x$

c). Find region in xy plane that is mapped to the triangle with vertices $(0,0)$. $(-1,2)$. $(2,1)$.

(a). $\det\begin{pmatrix}1 & -2 \\ 2 & -1\end{pmatrix}=3$. $\quad \frac{1}{3}\begin{pmatrix}-1 & 2 \\ -2 & 1\end{pmatrix}\begin{pmatrix}u \\ v\end{pmatrix}=\begin{pmatrix}-\frac{1}{3}u+\frac{2}{3}v \\ -\frac{2}{3}u+\frac{1}{3}v\end{pmatrix}$

(b)



$f(0,0)=(0,0)$.

$f(\frac{1}{3},\frac{1}{3})=(-\frac{1}{3},\frac{1}{3})$

$f(0,0)=$

$f(1,-1)=$