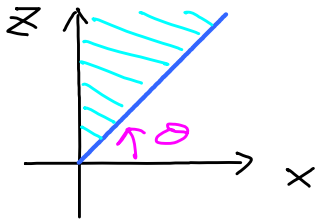
BY GIMUSI 13/10/17

$x^2+y^2+z^2-xyz$ per $[x^2+y^2+z^2\to+\infty]$ nel dominio $D=(x,y,z)inR^3:1\le y\le 2, 0\le x\le z$

COORDINATE CILINDRICHE



$1\le y\le 2$

$$\begin{cases} x=\rho\cos\theta \\ z=\rho\sin\theta \end{cases} \qquad \frac{\pi}{4}\le\theta\le\frac{\pi}{2} \qquad \rho\to+\infty$$

$$\rightsquigarrow x^2+y^2+z^2-xyz =$$

$$= \rho^2\cos^2\theta + y^2 + \rho^2\sin^2\theta - \rho^2\sin\theta\cos\theta\cdot y =$$

$$= \rho^2(1-y\sin\theta\cos\theta)+y^2 =$$

$$= \rho^2\left(1-\frac{1}{2}y\sin 2\theta\right)+y^2$$

$$1-\frac{y}{2}\le 1-\frac{1}{2}y\sin 2\theta\le 1$$

$\theta=\frac{\pi}{4}$ $\qquad$ $\theta=\frac{\pi}{2}\ \forall y$

1) $\theta=\frac{\pi}{4}$ $(x=z)$

$$\begin{cases} y=z & \rightsquigarrow x^2+y^2+z^2-xyz\to 4 \\ 1\le y<z & \rightsquigarrow x^2+y^2+z^2-xyz\to+\infty \end{cases}$$

2) $\theta\in\left(\frac{\pi}{4},\frac{\pi}{2}\right]$ $\rightsquigarrow$ $x^2+y^2+z^2-xyz\to+\infty$

$\rightsquigarrow$ LIMINF $=4$ $\qquad$ LIMSUP $=+\infty$