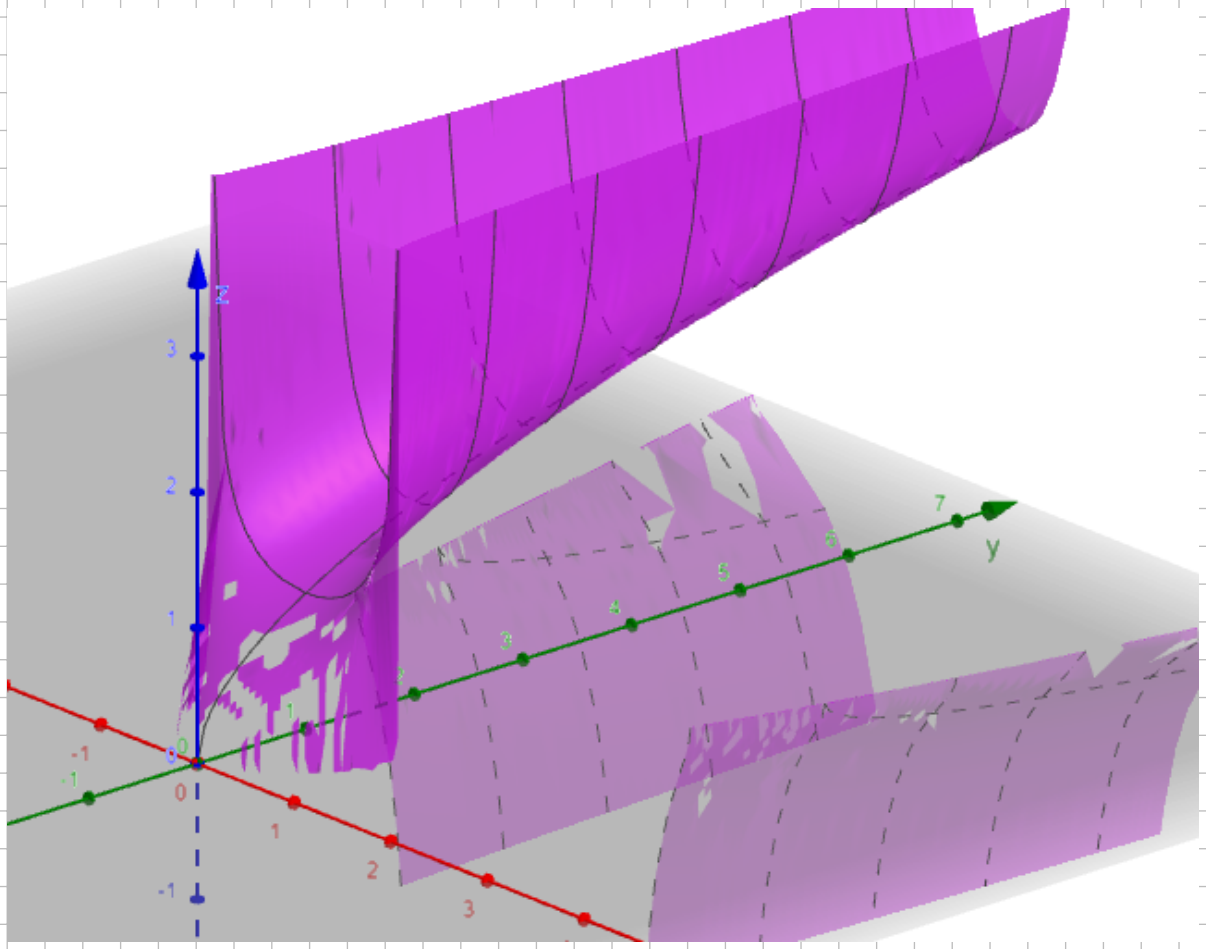
Determine y grafique el dominio de la función $f(x,y) = \frac{\sqrt{y-x^2}}{1-x^2}$

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

$$1-x^2 \neq 0 \rightarrow x \neq \pm 1$$

$$\sqrt{y-x^2} \quad y-x^2 \geq 0 \text{ o } y \geq x^2$$

$$\text{Dom } f: \{(x,y) \in \mathbb{R}^2 : x \neq \pm 1, y \geq x^2\}$$



2

$$\int_1^2 (t^2 i + t\sqrt{t-1}\,j + t\,\mathrm{sen}(\pi t)k)\,dt$$

$$i\int_1^2 t^2\,dt$$

$$j\int_1^2 t\sqrt{t-1}\,dt$$

$$k\int_1^2 t\,\mathrm{sin}(\pi t)\,dt$$

$$\int_1^2 t^2\,dt = \frac{t^3}{3}\Big|_1^2 = \frac{8}{3} - \frac{1}{3} = \frac{7}{3}$$

$$\int_1^2 t\sqrt{t-1}\,dt \qquad u = t-1$$

$$\int_1^2 t\,\mathrm{sin}(\pi t)\,dt$$

$$\frac{7}{3}i + \qquad j + 0k$$

Determine y grafique el dominio de la función $f(x, y, z) = \sqrt{1 - x^2 - y^2 - z^2}$

$1 - x^2 - y^2 - z^2 \geq 0$

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

Dom f: esfera unitaria centrada en origen