

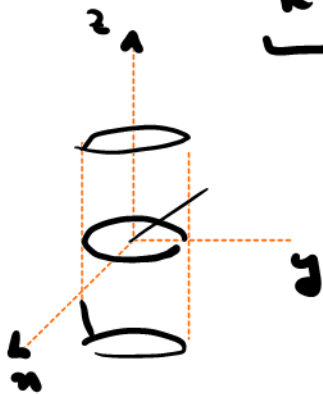
# ادامہ رسم سطوح درجہ ۲

ج منی: خط

$$x^2 = z^2$$



مثال مجہداتاً صادر در مدار  $x^2 + y^2 = 1$  را رسم کنید.



مثال کل مدار  $x^2 + y^2 + z^2 = 1$  را رسم کنید.

کلمه:

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$$

$$\{(x, y, z) \in \mathbb{R}^3 \mid x^2 + y^2 + z^2 = 1\}$$

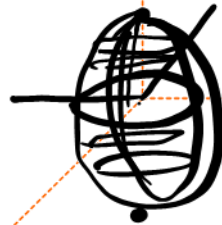
$$z = 1$$

$$x^2 + y^2 = 0$$

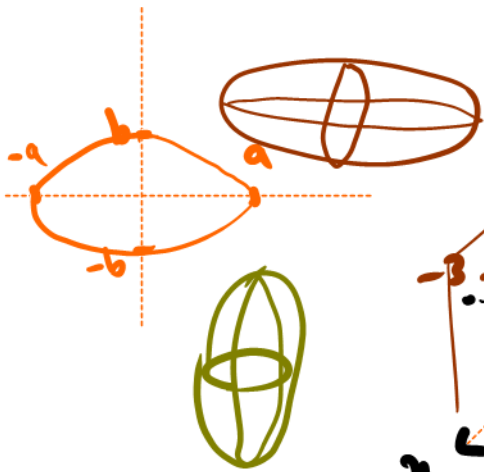
بافتها میرا

ellipse  
ellipsoid

کره

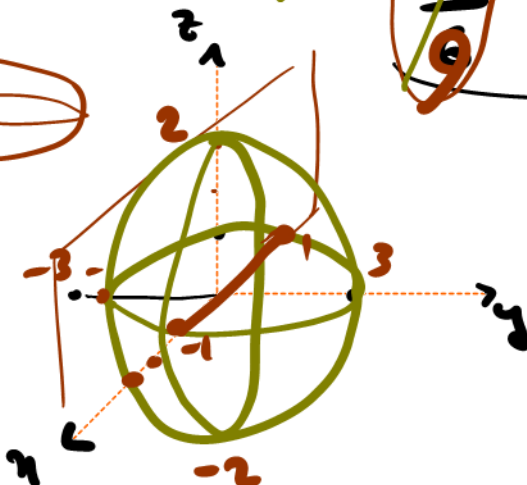


$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$$



$$\frac{x^2}{9} + \frac{y^2}{4} + \frac{z^2}{1} = 1$$

مثال



دند محبت  
 $\mathbb{R}^2$

دايره

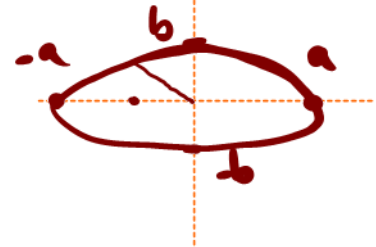
$$\frac{x^2}{r^2} + \frac{y^2}{r^2} = 1 \rightarrow x^2 + y^2 = r^2$$



ليكن :

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$$

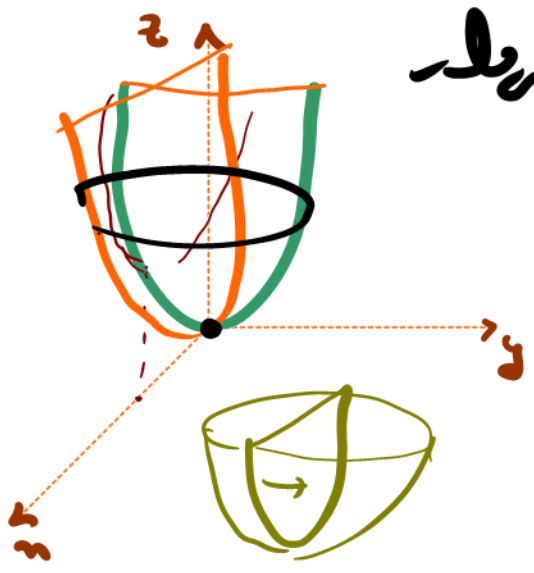
ليكن مكان هندسه و نماش است ؟



سفره

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

مثال



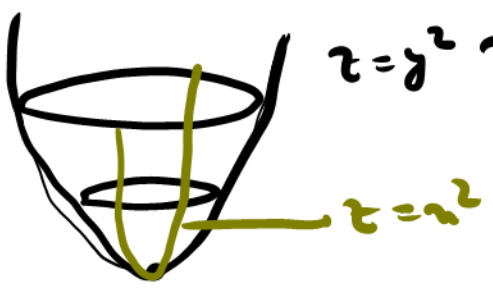
$$z = 1 + y^2$$

$$z = ax^2 + by^2$$

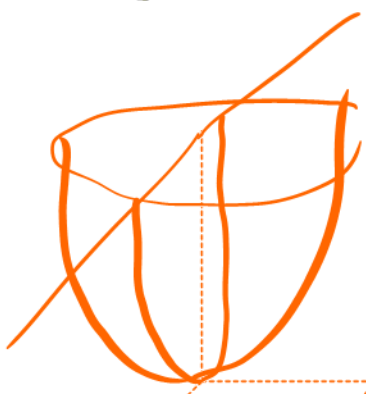
$$z = x^2$$

$$z = 0 \Rightarrow x^2 + y^2 = 0$$

$$\begin{aligned} x &= 0 \\ y &= 0 \end{aligned}$$



$$z = y^2 \quad z = 1 \Rightarrow x^2 + y^2 = 1$$



Paraboloid

کره مار بقیه

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

$$z = 4x^2 + y^2 \quad \text{مثال}$$

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

بیضی است. ۱

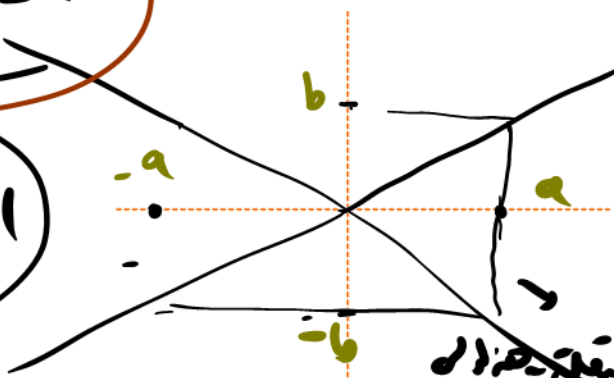
$$\frac{x^2}{\frac{1}{4}} + \frac{y^2}{1} = 1$$



هذلولی (دو مجانب)

$$\frac{x^2}{9} - \frac{y^2}{16} = 1$$

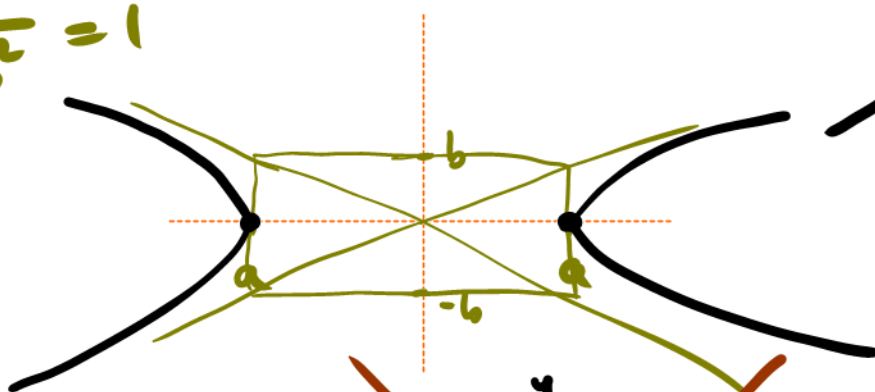
$$\frac{x^2}{16} - \frac{y^2}{9} = 1$$



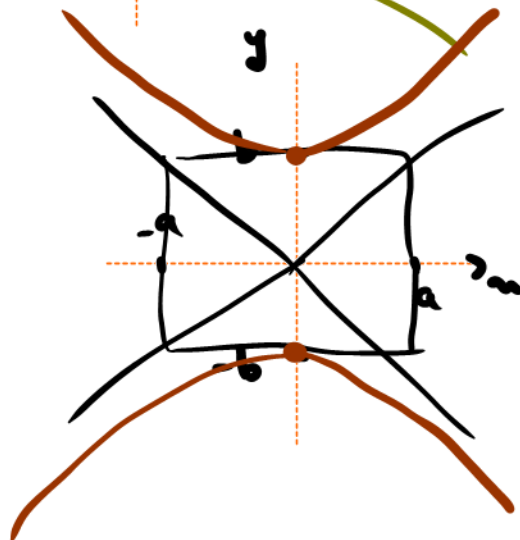
مستوی هذلولی

هذلولی

$$\frac{x^2}{9} - \frac{y^2}{16} = 1$$



$$\frac{x^2}{9} - \frac{y^2}{16} = 1$$



# مثال معادله

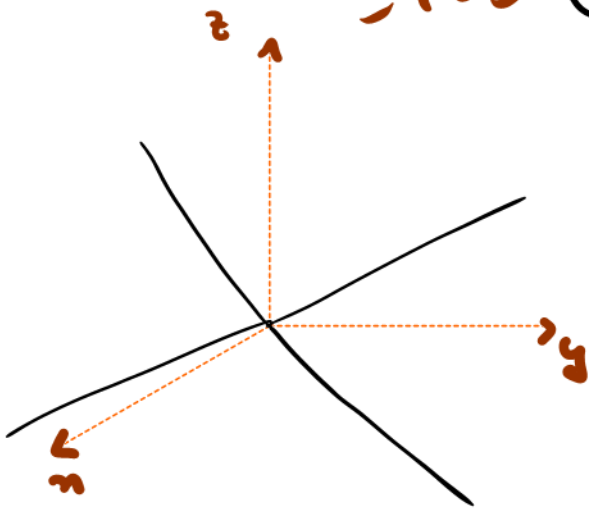
رسم کنید:  $z = y^2 - x^2$

$$z=0 \Rightarrow y^2 - x^2 = 0$$

$$\Rightarrow (y-x)(y+x) = 0$$

$$\Rightarrow y = x$$

$$\begin{cases} y = x \\ y = -x \end{cases}$$



$$z = y^2 - x^2$$

$$z=0$$

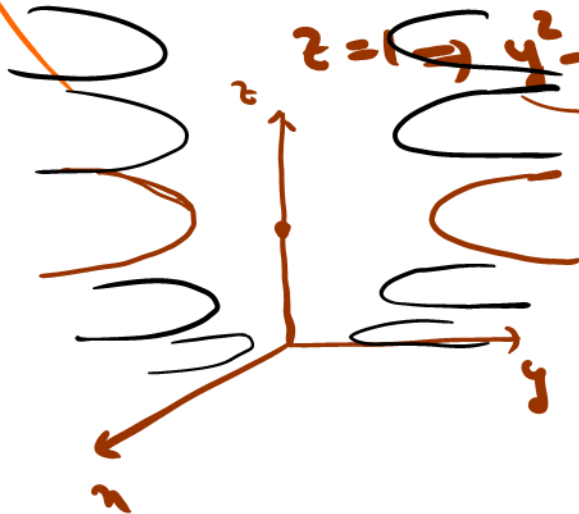
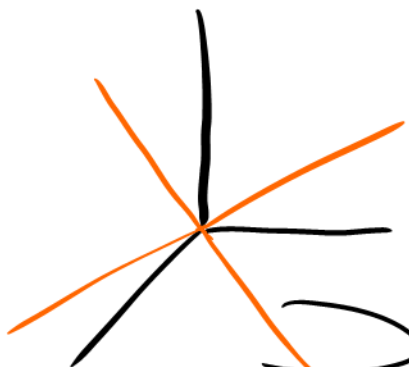
$$z = \frac{1}{2} \Rightarrow y^2 - x^2 = \frac{1}{2}$$

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

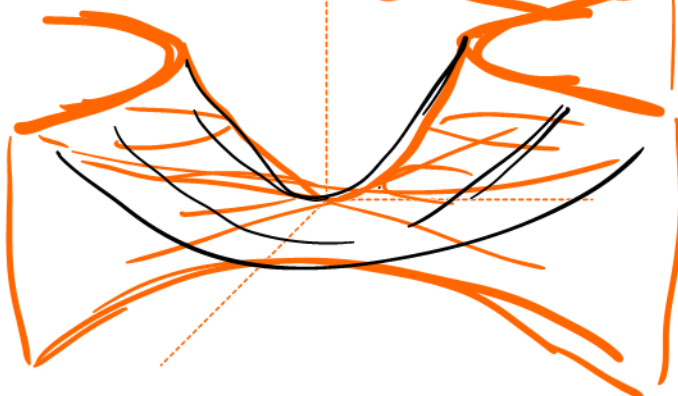
$$z = -1$$

$$x^2 - y^2 = 1$$

$$z = 1$$

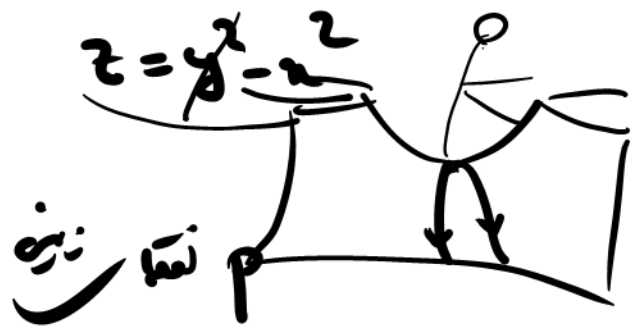
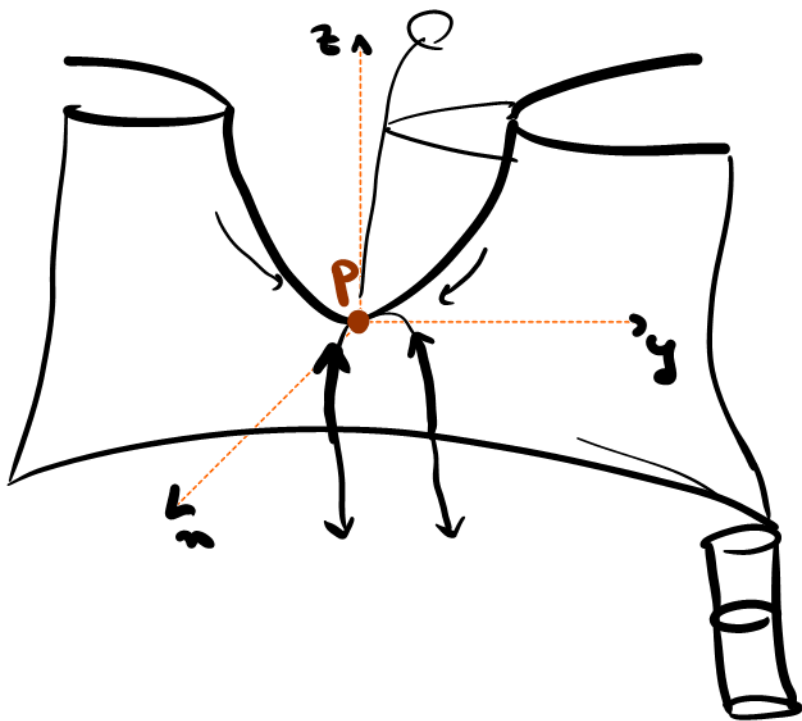


رسم کنید:  $z = y^2 - x^2$



نجم

کتابخانه

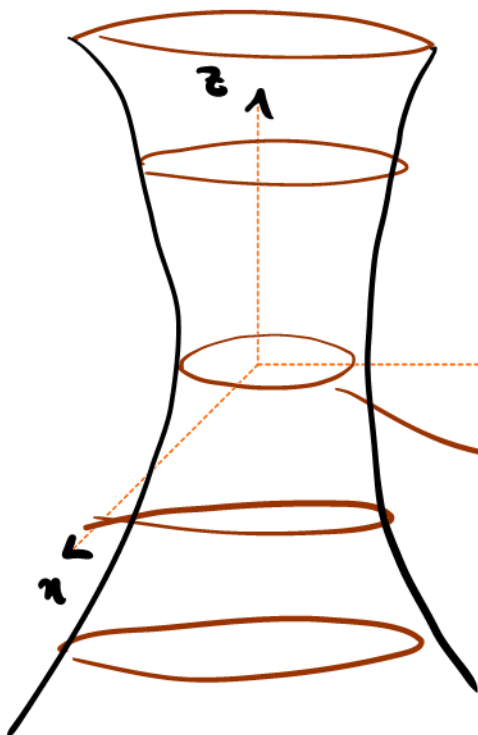


$$\frac{x^2}{a^2} + \frac{y^2}{b^2} - \frac{z^2}{c^2} = 1 \quad \text{مکرر}$$

$$\boxed{z = x^2 - y^2}$$

زیاده

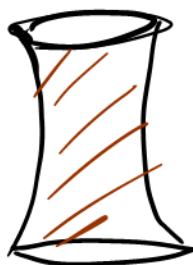
مثال



$$\boxed{z^2 + 1 = x^2 + y^2}$$

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

$$y^2 - z^2 = 1 \quad \text{عند } x=0$$



هذه الدائرة هي دائرة

في المستوى

هذه الدائرة



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

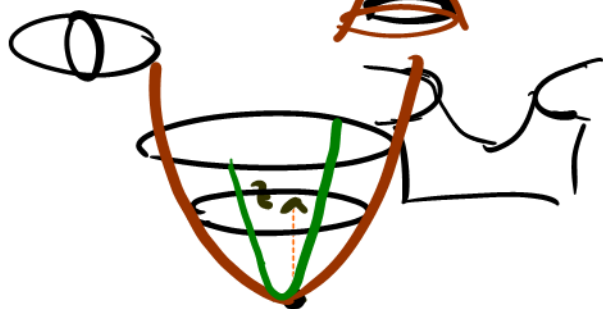
مثال

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

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

یا راسته

$$z = y^2 - x^2$$



$$\frac{z^2}{z-1} = \frac{x^2 + y^2}{x^2 + y^2}$$

مثال

جمع شکل داریم  $-1 < z < 1 \Rightarrow$

$$z=0 \Rightarrow \frac{z^2}{z-1} = 1 \Rightarrow$$



هندسه را در نظر داریم



$$z = y^2 - x^2$$

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



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



خفا

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



آفرین شکل

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

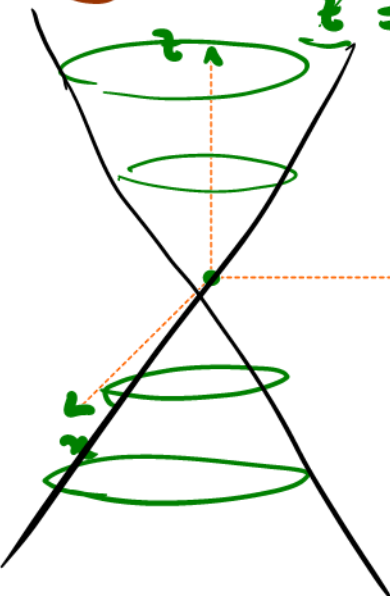
$$z = 0$$

$$x=0 \Rightarrow z^2 - y^2 = 0$$

$$\Rightarrow (z-y)(z+y) = 0$$

$$\Rightarrow z = y$$

$$z = -y$$



مسئله در انتهای شکل ما ۵  
نمونه هر شکل با عدد درجه  
نهایتاً به صورت یک از اشکال ذکر شده  
 ظاهر بود.

مسئله دوباره در ۲ به صورت زیر را رسم کنید.

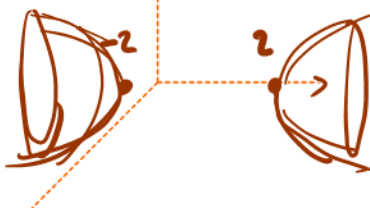
$$4x^2 - y^2 + 2z^2 + 4 = 0$$

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

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

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

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



$$x^2 + 2z^2 - 6x - y + 10 = 0$$

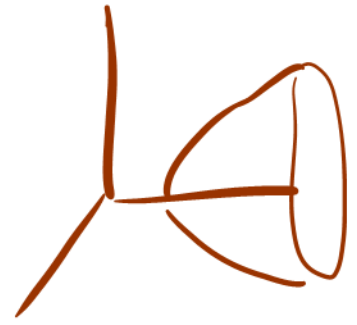
مسئله

$$(x-3)^2 - 9 + 2z^2 - y + 10 = 0 \Rightarrow x^2 + z^2 = y$$

$$(x-3)^2 + 2z^2 = y - 1$$



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



$$ax + by + cz + d = 0$$



خدا به حق است اول :

$$\frac{x-x_0}{a} = \frac{y-y_0}{b} = \frac{z-z_0}{c}$$

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$$



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



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



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



$$z = y^2 - x^2$$



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





