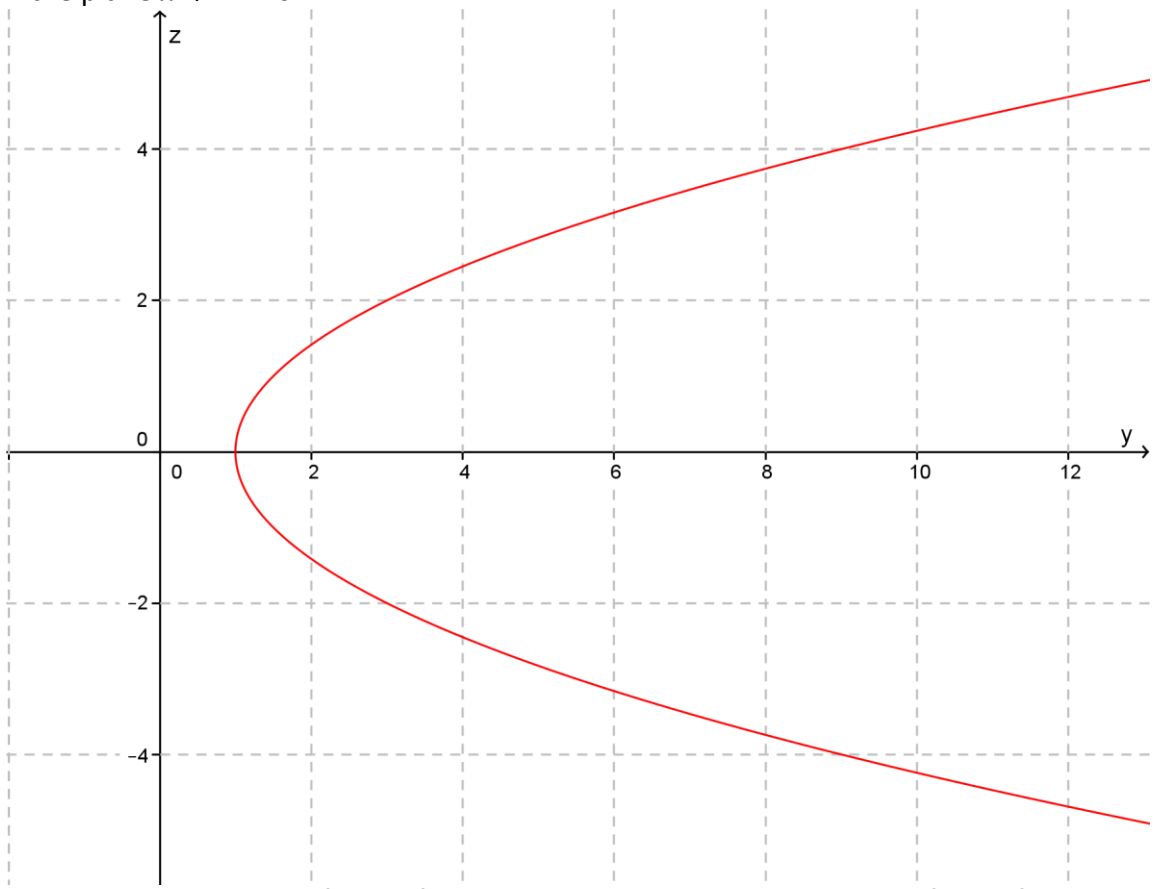
Answer on Question #46173 - Math - Analytic Geometry

Problem.

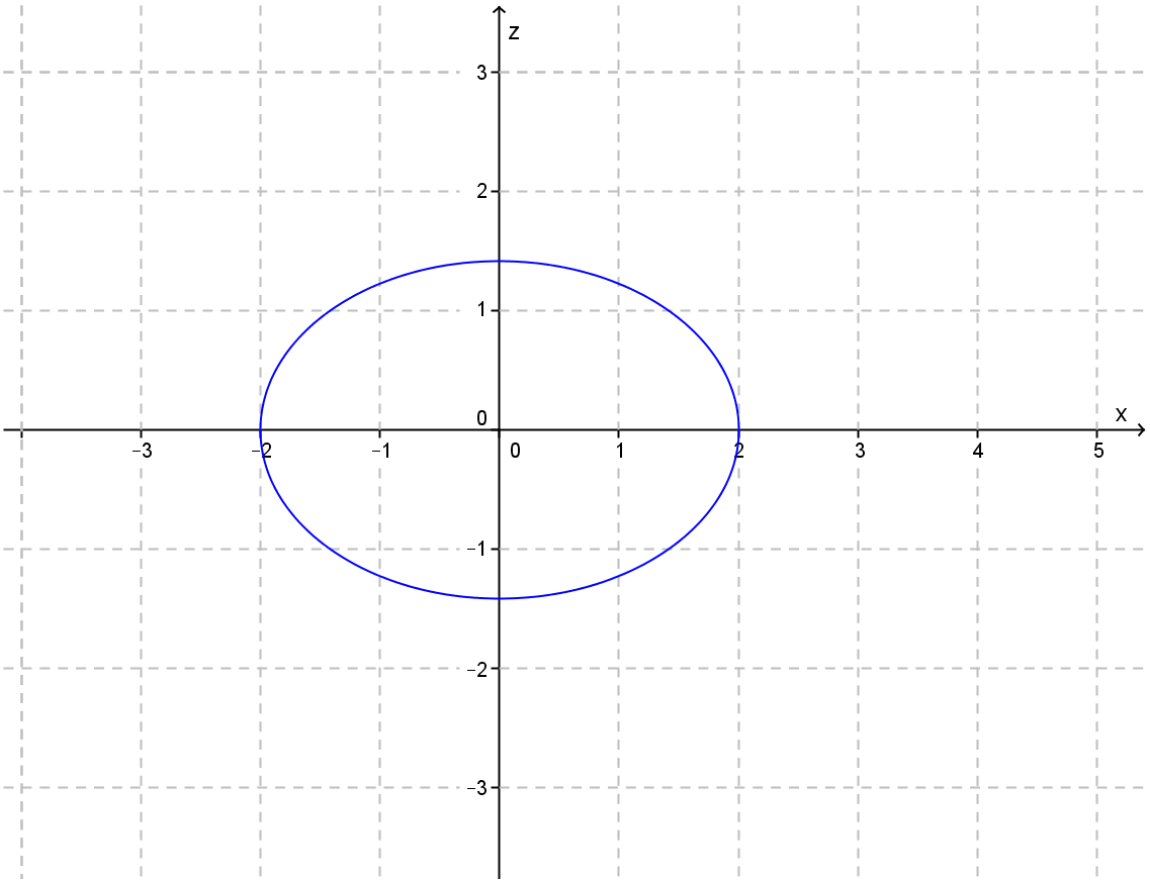
Trace the conicoid given by x^2 + 2z^2 = 4y. What are the sections of this conicoid by the planes x+2=0 and y=1 ?
Describe geometrically.

Solution.

The intersection of conicoid $x^2 + 2z^2 = 4y$ with plane $x + 2 = 0$ is parabola $4 + 2z^2 = 4y$ (red line) in the plane $x + 2 = 0$.



The intersection of conicoid $x^2 + 2z^2 = 4y$ with plane $y = 1$ is parabola $x^2 + 2z^2 = 4$ (blue line) in the plane $y = 1$.


z
3
2
1
0
−1
−2
−3
x
−3
−2
−1
0
1
2
3
4
5