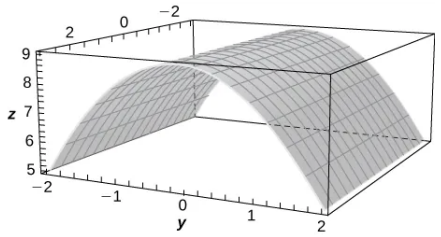
4 09-04-2025

Note: We do NOT cover the foci of paraboloids or ellipsoids.

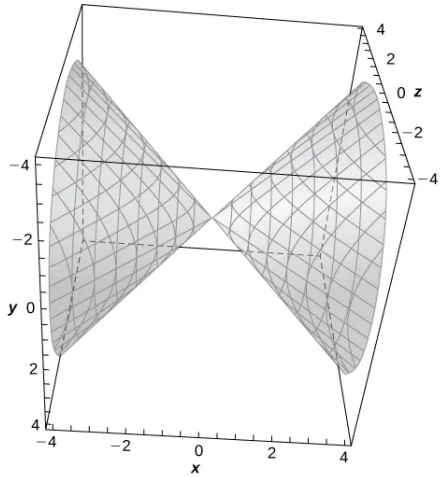
4.1 Section 2.6, Exercises 309-312

For the following exercises, the graph of a quadric surface is given.

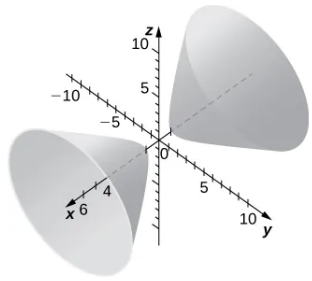
a. Specify the name of the quadric surface.
b. Determine the axis of the quadric surface.



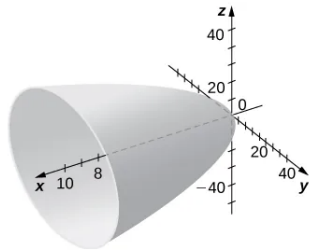
309.



310.



311.



312.

4.2 Section 2.6, Example 2.59 Identifying Equations of Quadric Surfaces

Identify the surfaces represented by the given equations.

(a) $16x^2 + 9y^2 + 16z^2 = 144$

(b) $9x^2 - 18x + 4y^2 + 16y - 36z + 25 = 0$

4.3 Section 2.6, Checkpoint 2.54

Identify the surface represented by the equation $9x^2 + y^2 - z^2 + 2z - 10 = 0$.

4.4 Seciton 2.6, Exercise 350

Find the equation of the quadric surface with points $P(x, y, z)$ that are equidistant from point $Q(0, 2, 0)$ and plane of equation $y = -2$. Identify the surface.