We discussed "V-gear" forgetting how easy it is to forget significant parts of things we have simply memorized.

The Quadric Surface from yesterday was either a sphere, a point, or no graph.

Quadric Surfaces. (p. 869 bottom) § 13.6.

Example 4. p. 870: Use Traces to sketch \( z = 4x^2 + y^2 \).

Let \( z = 0, 1, 2, 3, 4 \).

Plot \( (y, z) \) becomes:
- \( 4x^2 + y^2 = 0 \) then \( (0, 0) \)
- \( 4x^2 + y^2 = 1 \) then \( (0, 1) \)
- \( 4x^2 + y^2 = 2 \) then \( (1, \sqrt{2}) \)
- \( 4x^2 + y^2 = 3 \) then \( (1, 1) \)
- \( 4x^2 + y^2 = 4 \) then \( (2, 0) \)

The elliptic paraboloid.

Planes \( \parallel \) the \( xy \)-plane:

1. \( z = y^2 \)
2. \( z = 4 + y^2 \)
3. \( z = 16 + y^2 \)

Intersection with the \( xz \)-plane.

Level Curves of \( z = 4x^2 + y^2 \):

For \( z = 0, 1, 4 \).