1. §13.6: Cylinders and Quadric Surfaces, p. 868.

A) Cylinders, p. 868. "base" is a circle.

II "Soup Can" — Right Circular Cylinder
side-walls ⊥ to "base"

II Def (Book) A cylinder is a surface that consists
of all lines parallel to a given line and which pass
(rulings)
through a given plane curve.

3. Example: \( z = \sin(y) \)

B) QUADRIC SURFACES: GENERAL EQ.

\[ Ax^2 + By^2 + Cz^2 + Dxy + Eyz + Fxz + Gx + Hy + Ix + J = 0 \]

Ex \( x^2 + y^2 + z^2 - 5 = 0 \)
Recognizing Std. Quadric Surfaces, p. 872.


(a) Ellipsoid — Std Form

\[
\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1.
\]

(b) Elliptic Paraboloid — Std Form

\[
\frac{z}{c} = \frac{x^2}{a^2} + \frac{y^2}{b^2}.
\]

(c) etc...

Know Your (Six) Quadric Surfaces!