MTHSC 206 Section 12.6 – Cylinders and Quadric Surfaces

Kevin James

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Example

Graph the following cylinders.

1. $z = y^2$
2. $x^2 + y^2 = 25.$
3. $x^2 + z^2 = 36.$

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However, by translating (moving in the x-, y-, and z-directions) the surface can be assumed to have an equation of one of the following forms.

1. $Ax^2 + By^2 + Cz^2 + Iz = 0$,
2. $Ax^2 + By^2 + Cz^2 + J = 0$.

Exercise

Graph the following surfaces.

1. Ellipsoid: $\frac{x^2}{25} + y^2 + \frac{z^2}{4} = 0$.
2. Elliptic Paraboloid: $z = x^2 + 9y^2$.
3. Hyperbolic Paraboloid: $z = x^2 - y^2$.
4. Cone: $z^2 = x^2 + y^2$.
5. Hyperboloid of One Sheet: $x^2 + y^2 - z^2 = 1$.
6. Hyperboloid of Two Sheets: $-x^2 - y^2 + z^2 = 1$.