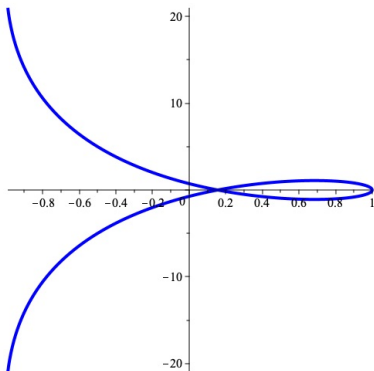# MATH 223: Multivariable Calculus

Class 3: February 18, 2022

Notes on Assignment 2

Assignment 3
Circles and Ellipses and Parametrized
Curves(Handouts Folder)

Announcements

1. No In Person Office Hours Today or Monday
2. Monday's Class on Zoom
3. Getting Started with *Maple*

Corrected Version of Solution to Question 4

4. The orbits of planets around the sun are approximately elliptical with the sun as a focus. The *aphelion* is a planet's greatest distance from the sun and the *perihelion* is its least distance. The length of the major axis is the sum of the aphelion and the perihelion. Earth's aphelion is 94.51 million miles and its perihelion is 91.40 million miles. Write an equation for Earth's orbit. *Solution*: Set up a coordinate system with the center of the ellipse at the origin.

The major axis is $94.51 + 91.40 = 185.91$ so the vertices are at ± 92.96 and the Sun's position is at $(92.96 - 91.40,0) = (1.56,0) = (c,0)$. Thus $a^2 = 92.96^2$ and $b^2 = a^2 - c^2 = 92.96^2 - 1.56^2 = 8639.13 = 92.95^2$. An equation for the Earth's orbit is

$$\frac{x^2}{92.96^2} + \frac{y^2}{92.95^2} = 1$$