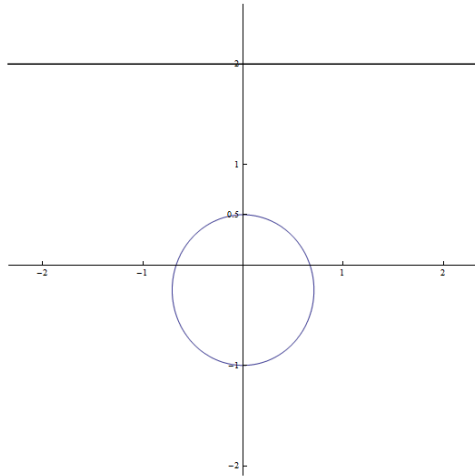


YOUR NAME: \_\_\_\_\_

George Voutsadakis

Read each problem **very carefully** before starting to solve it. Each problem is worth 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. Find a polar equation for the ellipse shown below:



2. Consider the following equation:

$$x^2 - 9y^2 - 4x - 18y - 14 = 0.$$

Classify which type of conic section it represents.

- If it is a parabola, find the location of its focus and directrix.
- If it is an ellipse find the location of its foci and the vertices on its major axis.
- If it is a hyperbola, find the location of its foci and its vertices.