

Section 9.8 Polar Equations of Conics

Objective: In this lesson you learned how to write conics in terms of eccentricity and to write equations of conics in polar form.

Course Number

Instructor

Date

I. Alternative Definition of Conics (Page 722)

The locus of a point in the plane that moves so that its distance from a fixed point (focus) is in a constant ratio to its distance from a fixed line (directrix) is a _____. The constant ratio is the _____ of the conic and is denoted by e . Moreover, the conic is an ellipse if _____, a parabola if _____, and a hyperbola if _____.

For each type of conic, the focus is at the _____.

What you should learn

How to define conics in terms of eccentricities

II. Polar Equations of Conics (Pages 722–724)

The graph of the polar equation _____ is a conic with a vertical directrix to the right of the pole, where $e > 0$ is the eccentricity and $|p|$ is the distance between the focus (pole) and the directrix.

The graph of the polar equation _____ is a conic with a vertical directrix to the left of the pole, where $e > 0$ is the eccentricity and $|p|$ is the distance between the focus (pole) and the directrix.

The graph of the polar equation _____ is a conic with a horizontal directrix above the pole, where $e > 0$ is the eccentricity and $|p|$ is the distance between the focus (pole) and the directrix.

The graph of the polar equation _____ is a conic with a horizontal directrix below the pole, where $e > 0$ is

What you should learn

How to write and graph equations of conics in polar form

the eccentricity and $|p|$ is the distance between the focus (pole) and the directrix.

Example 1: Identify the type of conic from the polar equation

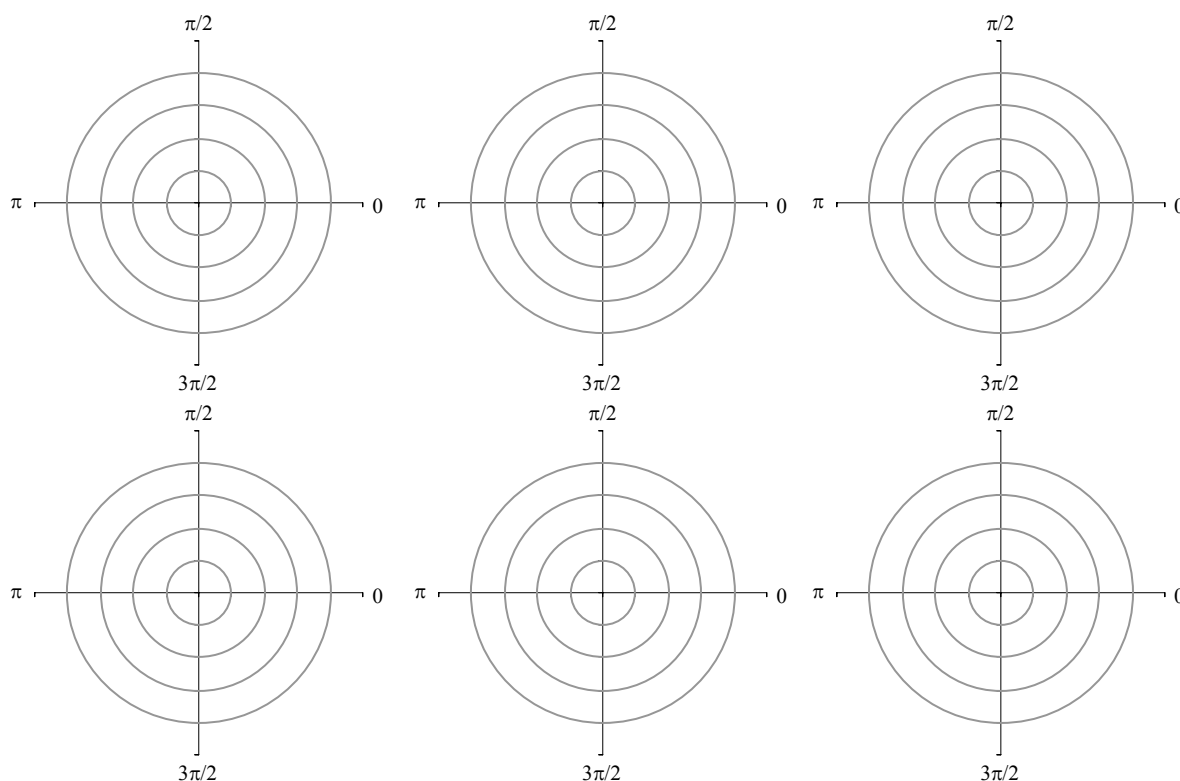
$$r = \frac{36}{10 + 12 \sin \theta}, \text{ and describe its orientation.}$$

III. Applications (Page 725)

Describe a real-life application of polar equations of conics.

What you should learn

How to use equations of conics in polar form to model real-life problems



Homework Assignment

Page(s)

Exercises