

# Unit 15: Conic Sections

Content Area: **Mathematics**  
Course(s): **PreCalc Trig H**  
Time Period: **Semester 2**  
Length: **1.5 weeks**  
Status: **Published**

## Standards - NJCCS/CCSS

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CCSS.Math.Content.HSG-GPE.A	Translate between the geometric description and the equation for a conic section
CCSS.Math.Content.HSG-GPE.A.1	Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.
CCSS.Math.Content.HSG-GPE.A.2	Derive the equation of a parabola given a focus and directrix.
CCSS.Math.Content.HSG-GPE.A.3	Derive the equations of ellipses and hyperbolas given the foci, using the fact that the sum or difference of distances from the foci is constant.

## Enduring Understandings

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Write and interpret the equation of a circle.

Recognize, write, graph, and interpret equations of conic sections.

## Essential Questions

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Geometrically, what is a conic section?

What is a degenerate conic?

How can one speculate which conic an equation represents in its general form?

How does one graph a conic section from an equation in standard form?

## Knowledge and Skills

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SWBAT graph a circle.

SWBAT write the equation of a circle.

SWBAT find the equation of the tangent line to a circle.

SWBAT graph an ellipse.

SWBAT write the equation of an ellipse.

SWBAT graph a hyperbola.

SWBAT write the equation of a hyperbola.

SWBAT graph a parabola.

SWBAT write the equation of a parabola.

SWBAT define circle, ellipse, hyperbola, and parabola.

## **Resources**

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Precalculus with Limits

Authors: Aufmann, Barker, Nation

Graphing Calculator

[www.desmos.com](http://www.desmos.com)

[www.flipgrid.com](http://www.flipgrid.com)

[www.graphfree.com](http://www.graphfree.com)