

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

Write and interpret the equation of a circle.

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

Essential Questions

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

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

Precalculus with Limits

Authors: Aufmann, Barker, Nation

Graphing Calculator

www.desmos.com

www.flipgrid.com

www.graphfree.com