



PARKSIDE CHRISTIAN ACADEMY

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## Weekly Sheet for HS-2 Algebra II

Mr. Charlton

Week # 9 Dates: October 24, 2011 – October 28, 2011

### Topics/Content/Skills:

**Topic:** Conic Sections: The Ellipse and the Hyperbola

**Content:**

A conic (or conic section) is a plane curve that can be obtained by intersecting a cone with a plane that does not go through the vertex of the cone. There are three possibilities, depending on the relative position of the cone and the plane. **If no line of the cone is parallel to the plane, the intersection is a closed curve, called an ellipse.** If one line of the cone is parallel to the plane, the intersection is an open curve whose two ends are asymptotically parallel; this is called a parabola. Finally, there may be two lines in the cone parallel to the plane; the curve in this case has two open pieces, and is called a hyperbola.

**Skills:** Students will be able to:

- Define ellipse and hyperbola and label the parts of each conic section
- Define the properties of ellipses and hyperbolas
- Explain Kepler's Laws of Planetary Orbit (optional)
- Understand how the eccentricity of Earth affects the planet

### Vocabulary/Key Terms/Formulas:

**Vocabulary:**

- a. An **absolute value function** has a special characteristic in that the function will not be negative.
- b. A **transformation** changes a graph's size, shape, position, or orientation.
- c. A **translation** is a transformation that shifts a graph horizontally and/or vertically, but does not change its size, shape, or orientation.
- d. A **vertical stretch** occurs when the coefficient of the variable is greater than one.
- e. A **vertical compression** occurs when the coefficient of the variable is less than one.
- f. A **reflection** occurs across the x-axis when the coefficient changes signs from positive to negative or vice versa.
- g. A **Circle** is a round plane figure whose boundary (the circumference) consists of points equidistant from a fixed center.
- h. A **Parabola** is a conic section, the intersection of a right circular conical surface and a plane parallel to a generating straight line of that surface.

- i. An **Ellipse** is a plane curve that results from the intersection of a cone by a plane in a way that produces a closed curve.
- j. A **Locus** is the set of points satisfying certain relations within an Ellipse; within the set of points, consists of the points equidistant from a fixed point, and a fixed line.

**Key Terms:** All

**Formulas:**

- $Abs(x) = y$
- $X^2 + Y^2 = r^2$
- $(X-h)^2 + k$  or  $Y = ax^2$
- $((x-h)^2/a^2) + ((y-k)^2/b^2) = 1$

**Homework:**

	<u>Lesson</u>	<u>Homework</u>
<b><u>Monday</u></b>	Review of: <ul style="list-style-type: none"> <li>• The Ellipse: Introduction</li> </ul>	Student will: <ul style="list-style-type: none"> <li>• Complete handout given in class</li> </ul>
<b><u>Tuesday</u></b>	Lesson: <ul style="list-style-type: none"> <li>• The Ellipse:</li> </ul>	Student will: <ul style="list-style-type: none"> <li>• Complete handout given in class</li> </ul>
<b><u>Wednesday</u></b>	Lesson: <ul style="list-style-type: none"> <li>• The Ellipse: Polar and Parametric Equations of an Ellipse</li> </ul>	Student will: <ul style="list-style-type: none"> <li>• <a href="http://www.khanacademy.org/video/conic-sections--intro-to-ellipses?playlist=Algebra">http://www.khanacademy.org/video/conic-sections--intro-to-ellipses?playlist=Algebra</a></li> <li>• Complete the handout, given in class.</li> </ul>
<b><u>Thursday</u></b>	Lesson: <ul style="list-style-type: none"> <li>• The Hyperbola</li> <li>• Practice and review lesson</li> <li>• Take home assignment: Introduction</li> </ul>	Students will: <ul style="list-style-type: none"> <li>• Complete handout</li> </ul>
<b><u>Friday</u></b>	Lesson: <ul style="list-style-type: none"> <li>• No class for HS2</li> </ul>	Students will: <ul style="list-style-type: none"> <li>• No Class</li> </ul>

**Tests:**

Quiz on Thursday

**Special Events/News:**

SPIRIT WEEK!

**Extra-ordinaries/Mastery Review Material:**

**Answer the Following:**

- $Y^2+X^2=9$  •
  - $Y^2+X^2=16$  •
  - $Y^2+X^2=25$  •
  - $Y^2+X^2=36$  •
  - $Y^2+X^2=49$  •
- What is the radius of the circles on the left? •

Equation of Circle in Standard Form

- $(y-3)^2+(x-1)^2=9$
  - $(y-5)^2+(x-14)^2=16$
  - $(y-1)^2+(x-5)^2=25$
  - $(x+2)^2+(y-12)^2=36$
  - $(y+7)^2+(x+5)^2=49$
  - $(x+8)^2+(y+17)^2=49$
- What is the center and radius of each circle to the left?