

Accel Pre-Calculus
March & April 2022
Unit 8 – Conic Sections

Monday	Tuesday	Wednesday	Thursday	Friday
March 14 Teacher Work Day No School	15 8.01 Parabolas Day 1 <ul style="list-style-type: none"> Graphing parabolas Parts of a parabola Standard Form HW: 8.01 Parabolas Day 1 Practice	16 8.02 Parabolas Day 2: <ul style="list-style-type: none"> Use CTS to write parabola equations in standard form HW: 8.02 Parabolas Day 2 Practice	17 8.03 Parabolas Day 3: <ul style="list-style-type: none"> Write the equation of a parabola given characteristics HW: 8.03 Parabolas Day 3 Practice	18 8.04 Circles Day 1: <ul style="list-style-type: none"> Graphing circles Standard form Writing equations given characteristics HW: 8.04 Circles Day 1 Practice
21 Early Release Day 8.05 Circles Day 2: <ul style="list-style-type: none"> Use CTS to write circle equations in standard form HW: 8.05 Circles Day 2 Practice	22 8.06 Review Parabolas and Circles HW: Study	23 8.07 <p style="text-align: center;">Quiz Parabolas and Circles</p>	24 8.08 Ellipses Day 1 <ul style="list-style-type: none"> Graphing ellipses Parts of an ellipse Standard Form HW: 8.08 Ellipses Day 1 Practice	25 8.09 Ellipses Day 2: <ul style="list-style-type: none"> Use CTS to write ellipse equations in standard form HW: 8.09 Ellipses Day 2 Practice
28 8.10 Ellipses Day 3: <ul style="list-style-type: none"> Write the equation of an ellipse given characteristics HW: 8.10 Ellipses Day 3 Practice	29 8.11 Hyperbolas Day 1 <ul style="list-style-type: none"> Graphing hyperbolas Parts of a hyperbola Standard Form HW: 8.11 Hyperbolas Day 1 Practice	30 8.12 Hyperbolas Day 2: <ul style="list-style-type: none"> Use CTS or characteristics to write hyperbola equations in standard form HW: 8.12 Hyperbolas Day 2 Practice	31 8.13 Review Ellipses and Hyperbolas HW: Study	5 8.14 <p style="text-align: center;">Quiz Ellipses and Hyperbolas</p>

Spring Break!

Distance: $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

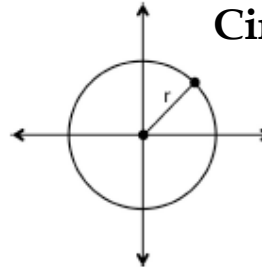
Coordinate Geometry

Midpoint: $\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$

Definitions of Variables:

(h, k): Center (or vertex of parabola)
 All distances relative to center (h, k):
 a = 1/2 Major/Transverse Axis, finds a vertex
 b = 1/2 Minor/Conjugate Axis, find a co-vertex
 c = finds a focus
 p = finds the focus & directrix (parabola only)
 e = Eccentricity = $\frac{c}{a}$

Circle

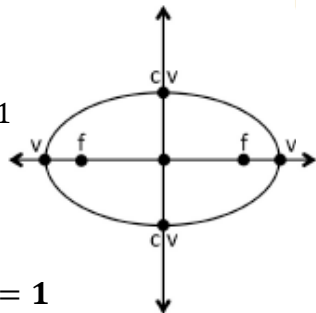


Center: (h, k)
 Radius: r
 Eccentricity: 0

$$(x - h)^2 + (y - k)^2 = r^2$$

Center: (h, k)
 Vertex: (h ± a, k)
 Co-Vertex: (h, k ± b)
 Focus: (h ± c, k)
 Eccentricity: $0 < \frac{c}{a} < 1$

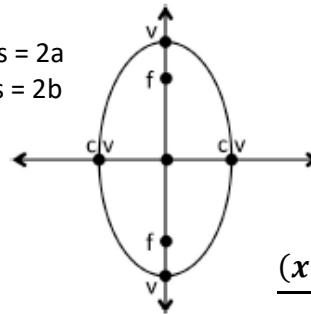
Horizontal:



Ellipse

$a^2 - b^2 = c^2$
 $a > b$
 Major Axis = 2a
 Minor Axis = 2b

Vertical:



Center: (h, k)

Vertex: (h, k ± a)
 Co-Vertex: (h ± b, k)
 Focus: (h, k ± c)
 Eccentricity: $0 < \frac{c}{a} < 1$

$$\frac{(x - h)^2}{a^2} + \frac{(y - k)^2}{b^2} = 1$$

$$\frac{(x - h)^2}{b^2} + \frac{(y - k)^2}{a^2} = 1$$

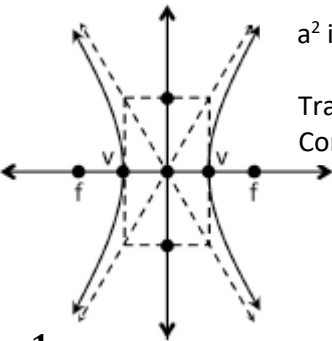
Center: (h, k)
 Vertex: (h ± a, k)
 Focus: (h ± c, k)
 Eccentricity: $\frac{c}{a} > 1$

Horizontal

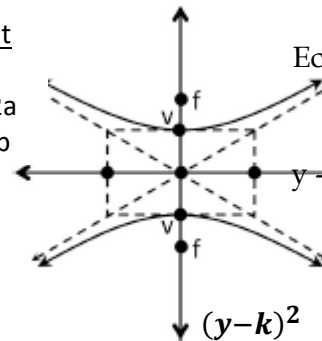
Hyperbola

$a^2 + b^2 = c^2$
 a^2 is always the first denominator
 Transverse Axis = 2a
 Conjugate Axis = 2b

Asymptotes:
 $y - k = \pm \frac{b}{a}(x - h)$



Vertical:



Center: (h, k)

Vertex: (h, k ± a)
 Focus: (h, k ± c)
 Eccentricity: $\frac{c}{a} > 1$

Asymptotes:

$$y - k = \pm \frac{a}{b}(x - h)$$

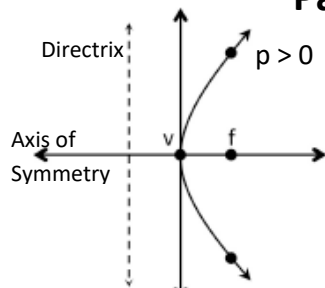
$$\frac{(x - h)^2}{a^2} - \frac{(y - k)^2}{b^2} = 1$$

$$\frac{(y - k)^2}{a^2} - \frac{(x - h)^2}{b^2} = 1$$

Vertex: (h, k)
 Focus: (h + p, k)
 Directrix: $x = h - p$
 Latus Rectum: 4p
 Axis of Symmetry: $y = k$
 Eccentricity: 1

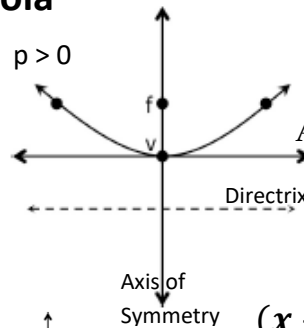
Horizontal

Parabola



$$(y - k)^2 = 4p(x - h)$$

Vertical:



$$(x - h)^2 = 4p(y - k)$$

Vertex: (h, k)

Focus: (h, k + p)
 Directrix: $y = k - p$
 Latus Rectum: 4p
 Axis of Symmetry: $x = h$
 Eccentricity: 1