

Conic Notes Chapter 10

Name: Answer Key

Date: _____ Per: _____

Please fill in the Blanks

CIRCLES

GENERAL FORM:

$Ax^2 + Cy^2 + Dx + Ey + F = 0$

STANDARD FORM:

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

Center - (h, k)

Radius - r

Find the center and radius of each circle whose equation is given.

(a) $(x - 2)^2 + (y + 3)^2 = 4$

(b) $(x + 5)^2 + y^2 = 13$

center $(2, -3)$ radius 2

center $(-5, 0)$ radius $\sqrt{13}$

PARABOLAS

GENERAL FORM:

$Ax^2 + Cy^2 + Dx + Ey + F = 0$

STANDARD FORM:

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

Vertex - (h, k)

Axis of Symmetry - $x = h$ or $y = k$

Directrix - $y = k \pm p$ or $x = h \pm p$

Focus - $(h, k \pm p)$ or $(h \pm p, k)$

Find the vertex, focus, Axis of Symmetry and Directrix of each Parabola whose equation is given.

(a) $(x - 2)^2 + 4 = y$

(b) $x + y^2 = 5$

$(x - 2)^2 = (y - 4)$

$(x - 5) = -y^2$

vertex $(2, 4)$ focus $(2, 4.25)$

vertex $(5, 0)$ focus $(4.75, 0)$

Axis of Symmetry $x = 2$

Axis of Symmetry $y = 0$

Directrix $y = 3.75$

Directrix $x = 5.25$

ELLIPSES

GENERAL FORM:

$$\underline{Ax^2 + Cy^2 + Dx + Ey + F = 0}$$

STANDARD FORM:

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

Center - (h , k)

Length of Major Axes - if $a > b$ then $2a$ and if $b > a$ then $2b$

Length of Minor Axes - if $a > b$ then $2b$ and if $b > a$ then $2a$

Foci - if $a > b$ then $(x \pm c, h)$ and if $b > a$ then $(x, h \pm c)$

if $a > b$ then $c = \sqrt{a^2 - b^2}$ and if $b > a$ then $c = \sqrt{b^2 - a^2}$

Find the Center, Foci, Length of the Major Axis, Length of the Minor Axis and All 4 Vertices of each Ellipse whose equation is given.

(a) $\frac{(y+6)^2}{16} + \frac{(x-4)^2}{25} = 1$

Center (4 , - 6)

Length of Major Axes - 10

Length of Minor Axes - 8

Foci - (7 , - 6) and (1 , - 6)

Vertices (9 , - 6) and (- 1 , - 6)

(4 , - 2) and (4 , - 10)

(b) $\frac{(x-2)^2}{4} + \frac{(y+3)^2}{9} = 1$

Center (2 , - 3)

Length of Major Axes - 6

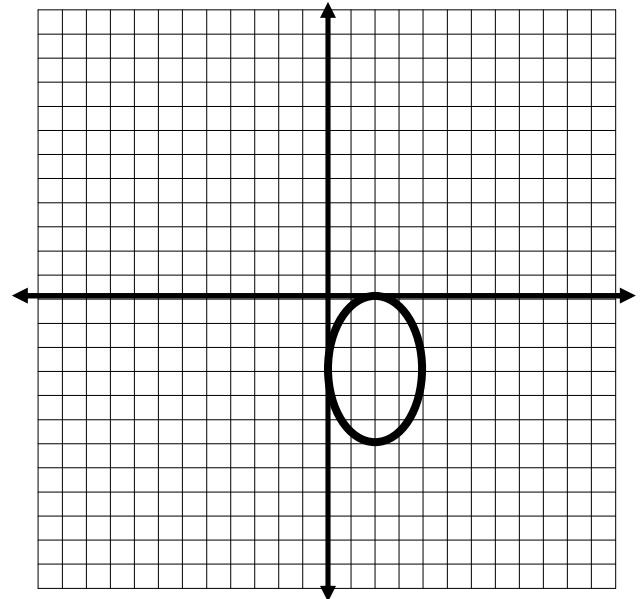
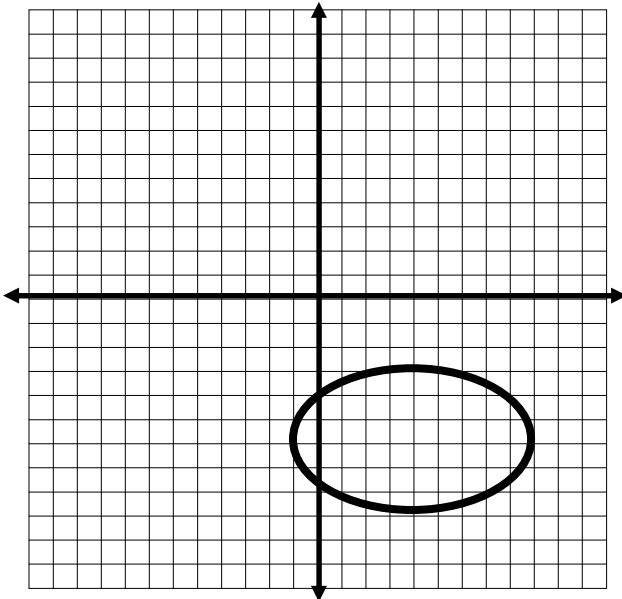
Length of Minor Axes - 4

Foci - (2 , - 3 + $\sqrt{5}$) and (2 , - 3 - $\sqrt{5}$)

Vertices (4 , - 3) and (0 , - 3)

(2 , 0) and (2 , - 6)

Sketch the Graph



HYPERBOLAS

GENERAL FORM:

$$\underline{Ax^2 + Cy^2 + Dx + Ey + F = 0}$$

STANDARD FORM:

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

Center - (h , k)

Length of Transverse Axes - 2a

Length of Conjugate Axes - 2b

Foci - if x is pos. then $(x \pm c, h)$ and if y is pos. then $(x, h \pm c)$

$$c = \sqrt{a^2 + b^2}$$

Find the Center, Foci, Length of Transverse Axes, Length of Conjugate Axes, both Vertices and the Equation of the Asymptotes of each Hyperbola whose equation is given.

(a) $\frac{(y+3)^2}{16} - \frac{(x-5)^2}{25} = 1$

Center (5 , - 3)

Length of Transverse Axes - 8

Length of Conjugate Axes - 10

Foci - (5 , - 3 + $\sqrt{41}$) and (5 , - 3 - $\sqrt{41}$)

Vertices (5 , 1) and (5 , - 7)

Equations of the Asymptotes $(y+3) = \pm \frac{4}{5}(x-5)$

(b) $\frac{(x-1)^2}{4} - \frac{(y+4)^2}{9} = 1$

Center (1 , - 4)

Length of Transverse Axes - 4

Length of Conjugate Axes - 6

Foci - (1 + $\sqrt{13}$, - 4) and (1 - $\sqrt{13}$, - 4)

Vertices (3 , - 4) and (- 1 , - 4)

Sketch the Graph

