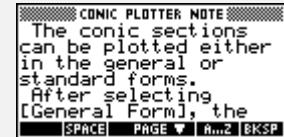


Objectives:

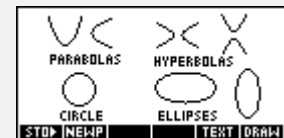
Using the **CONIC PLOTTER** applet, the student will investigate the conic sections in general and in standard form.

Functionality:

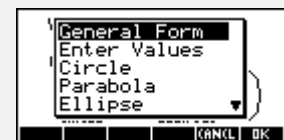
When the student presses **START**, the **CONIC PLOTTER NOTE** will be displayed.



After reading the note, the student should press **SKETCH** for further information.



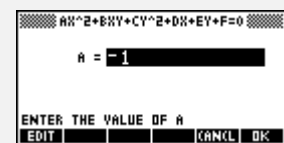
VIEWS allows the student to investigate the general form of a conic, or the standard form of a circle, parabola, ellipse, or hyperbola.



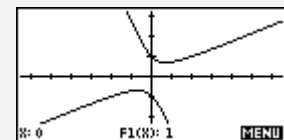
General Form prompt the student to enter values for the coefficients and constant of a conic in the general form:

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

In the example to the right, $A=-1$, $B=2$, $C=1$, $D=0$, $E=0$, and $F=-1$.



After the series of input forms, the corresponding graph will be displayed.



See Equation in the **VIEWS** menu will display the general form of the conic that has been graphed.

$$-x^2 + 2xy + y^2 - 1 = 0$$

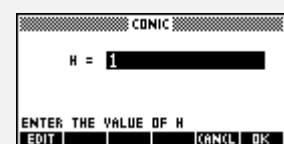
Ellipse will prompt the student to select the direction of the major axis.



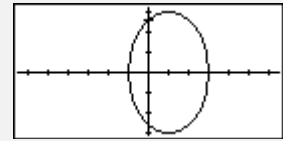
The standard form of the conic will then be displayed.

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

Enter Values will prompt the student to enter the necessary values.



After the series of input forms, the corresponding graph will be displayed.



See Equation in the **IEWS** menu will display the general form of the conic that has been graphed.

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

Programs associated with this applet:

.CON.EV, .CON.CIR, .CON.PAR, .CON.ELL, .CON.HYP, .CON.SF,
.CON.ST, .CON.SV

Exploring Conic Sections

Standard Form

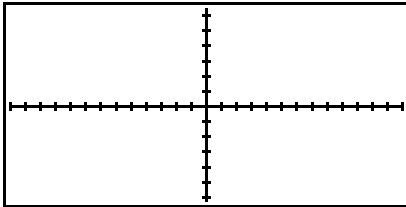
Name _____

Date _____

I. Graph. Identify the vertex and the axis of symmetry of each parabola.

1.

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

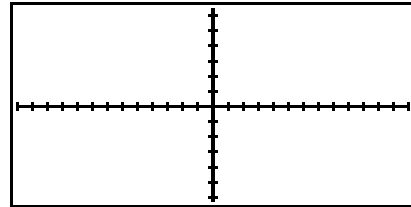


vertex:

axis of symmetry:

2.

$$x = 2(y - 1)^2 - 2$$



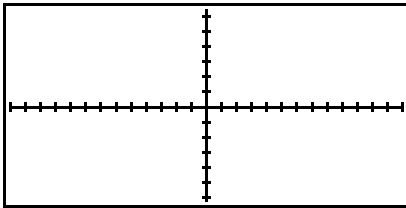
vertex:

axis of symmetry:

II. Graph. Identify the center and the radius of each circle.

3.

$$x^2 + y^2 = 36$$

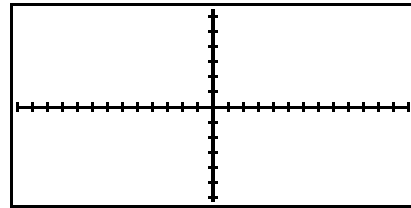


center:

radius:

4.

$$(x - 2)^2 + (y + 1)^2 = 25$$



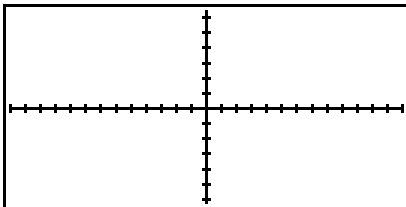
center:

radius:

III. Graph. Find the center and the endpoints of the major and minor axes of each ellipse.

5.

$$\frac{x^2}{4} + \frac{y^2}{9} = 1$$



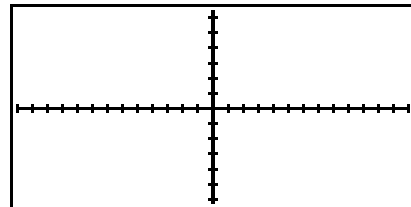
center:

major:

minor:

6.

$$\frac{x^2}{25} + \frac{y^2}{16} = 1$$



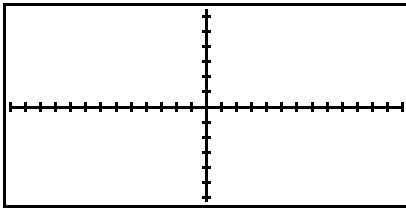
center:

major:

minor:

7.

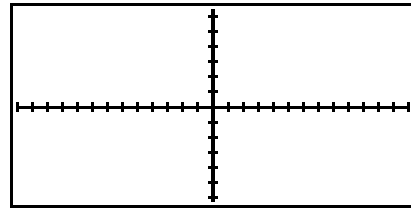
$$\frac{(x+1)^2}{36} + \frac{y^2}{4} = 1$$



center:
major:
minor:

8.

$$x^2 + 4y^2 = 16$$

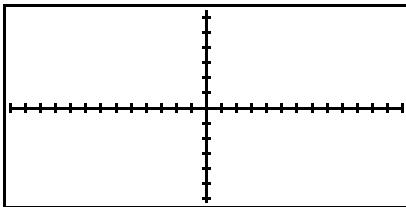


center:
major:
minor:

VI. Graph. Find the center and the vertices of each hyperbola.

9.

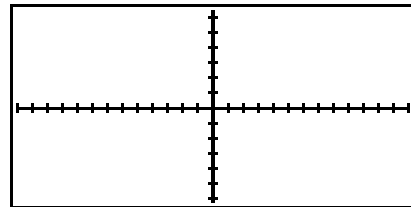
$$\frac{x^2}{4} - \frac{y^2}{16} = 1$$



center:
vertices:

10.

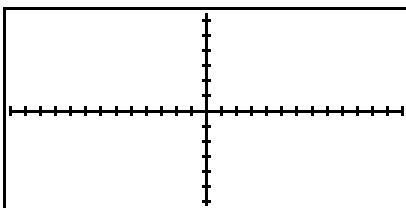
$$\frac{x^2}{25} - \frac{y^2}{9} = 1$$



center:
vertices:

11.

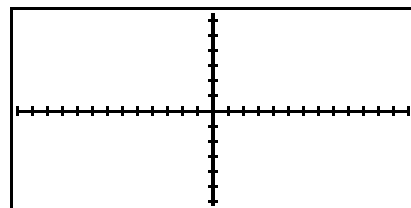
$$(x-1)^2 - \frac{y^2}{4} = 1$$



center:
vertices:

12.

$$4x^2 - 25y^2 = 100$$



center:
vertices:

V. Identify each of the following as a circle, ellipse, hyperbola, or parabola.

_____ 13. $9x^2 - 25y^2 = 1$

_____ 14. $x^2 + 2x - y = 3$

_____ 15. $x^2 + 2y^2 + 2y = 18$

_____ 16. $x^2 + 3x + y^2 - 2y = 15$

Exploring Conic Sections

General Form

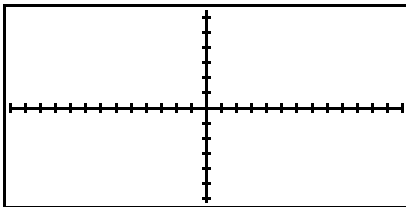
Name _____

Date _____

I. Identify each conic. Rewrite in standard form and graph.

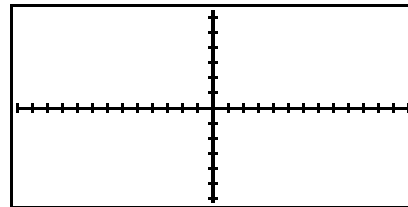
1. $9x^2 - 25y^2 = 1$

type:
Standard
Form:



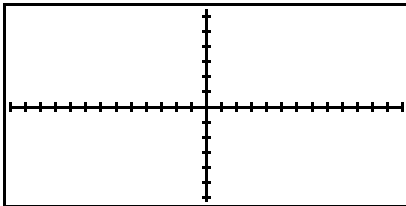
3. $x^2 + 2x - y = 3$

type:
Standard
Form:



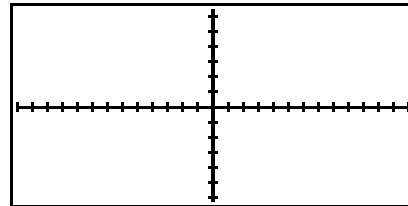
2. $4x^2 + 2y^2 + 2y = 14$

type:
Standard
Form:

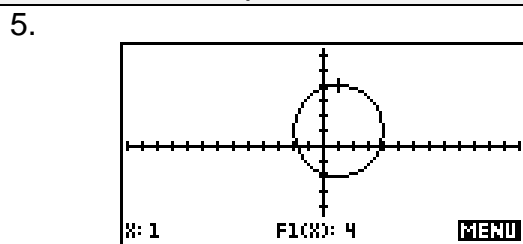


4. $x^2 + 3x + y^2 - 2y = 15$

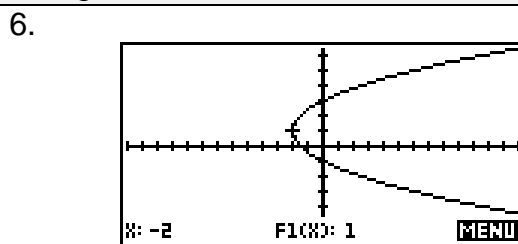
type:
Standard
Form:



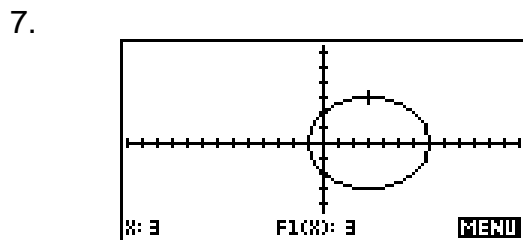
II. Write an equation for each of the following.



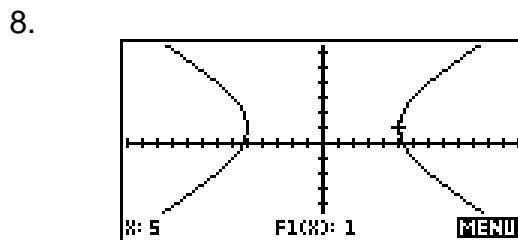
eq:



eq:



eq:



eq: