Day 4: Translating Graphs of Conics

Describe the effect of h and k on

$$(x-h)^2 \text{ and } (y-k)^2$$

If you have trouble, think of this example:

$$(x-2)^2+(y+5)^2=1$$

(h,k) → center of my conic is .

**h moves the graph left or right, while k moves the graph up or down. Therefore, (h, k) represents the location of the centre of the conic.

Steps for sketching ANY conic from its equation:

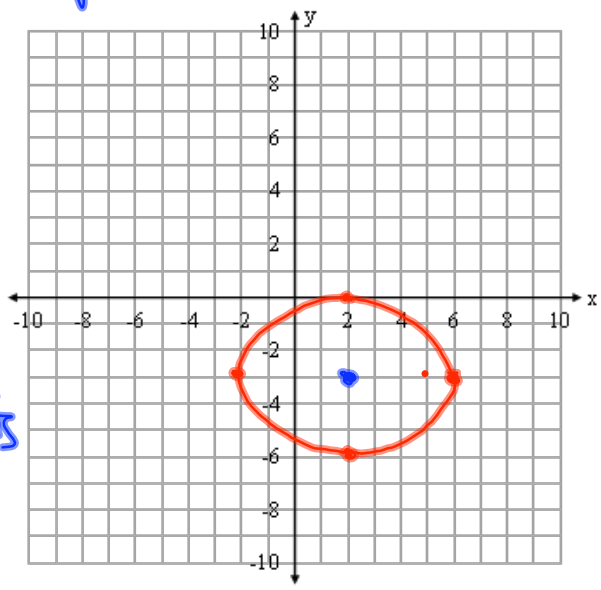
1) Decide on the type of conic from the equation
2) Locate the centre
3) Depending on the type of conic:
    a) Plot the major/minor axis (ellipse/circle)
    b) Plot the asymptotes/transverse axis (hyperbola)
4) Plot the vertices and sketch the graph

The expectations for EXACTLY the amount of work necessary to describe and sketch a conic given its equation will be demonstrated with the following examples. You MUST show all of this work for each individual conic type to earn full credit for a problem.

Eg 1) Describe and sketch the conic represented by

ellipse

$$\frac{(x-2)^2}{16}+\frac{(y+3)^2}{9}=1$$



Center: $(2, -3)$

Major axis: 4 units to the right of center

8 unit

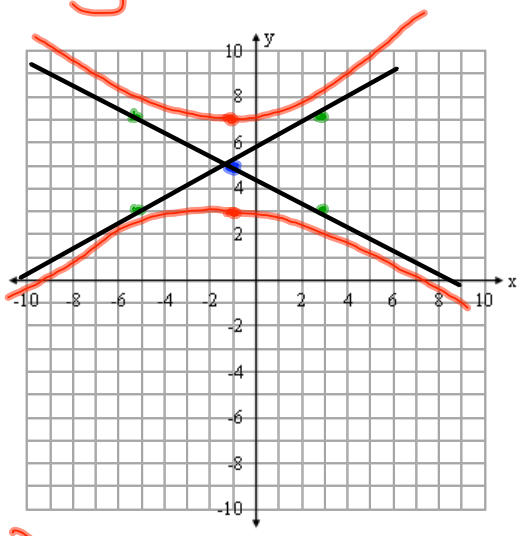
Minor axis: 6 units

$x+1=0$
$x=-1$

Eg 2) Describe and sketch the conic represented by

$$\frac{(x+1)^2}{16}+\frac{(y-5)^2}{4}=1$$

Hyperbola



Center: $(-1, 5)$

Vertices: $(-1, 7)$
$(-1, 3)$

asymptotes:

$y = \pm\frac{2}{4}x$

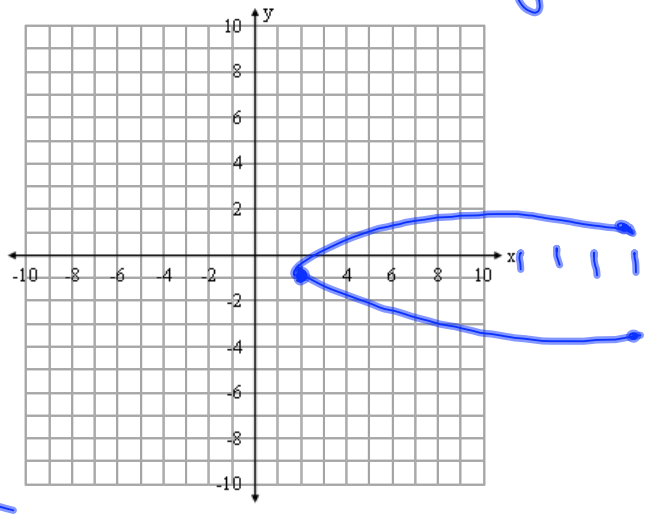
Eg 3) Describe and sketch the conic represented by

$$x-2=3(y+1)^2$$

parabola open to the right.

$x = 3(y+1)^2+2$

Vertex: $(2, -1)$



$x = 3(1+1)^2+2$

$x = 14$

$(14, 1)$

Assignment:
Pg. 548 #3-5, 6a-b

odds