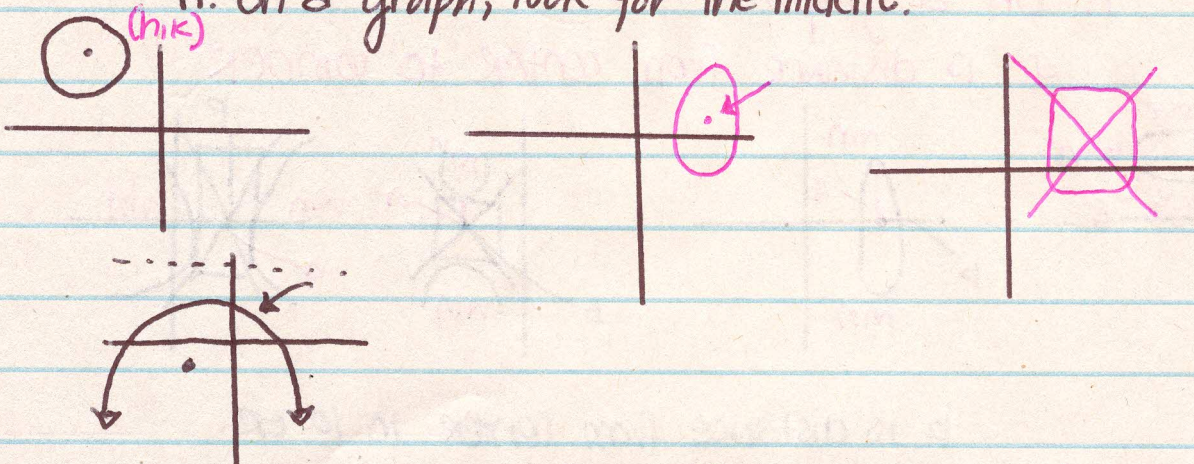


Ch. 10 Identifying Parts on a Conic

I. Finding the Center.

(h, k)

A. On a graph, look for the middle.



B. In the equation, the # subtracted from x is h !!!

C. The # subtracted from y is k !!!

ex. $\frac{(x-3)^2}{9} + \frac{(y-5)^2}{16} = 1$

$h = -3$ $k = 5$

formally:

$$x - h = x + 3$$

$$-h = 3$$

$$h = -3$$

$$(h, k) = (-3, 5)$$

$$y - k = y - 5$$

$$-k = -5$$

$$k = 5$$

ex. $y - 8 = \frac{1}{3}(x)^2$

$$y - k = y - 8$$

$$-k = -8$$

$$k = 8$$

$$x - h = x$$

$$-h = 0$$

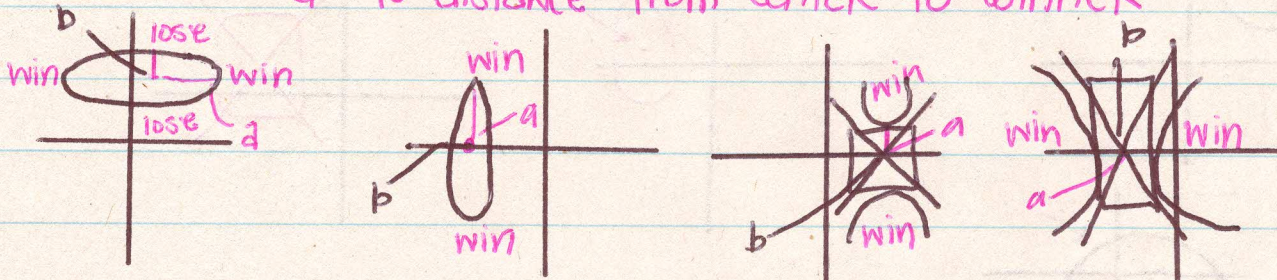
$$h = 0$$

$$(h, k) = (0, 8)$$

II. Finding a & b on ellipses & hyperbolas ONLY.

A. ON a graph

a is distance from center to winner



b is distance from center to loser

B. On Equation

a is the square root of the winning denominator

b is the square root of the losing denominator
(if -, use as a +)

$$\text{ex. } \frac{(x-3)^2}{9} - \frac{(y+2)^2}{100} = 1$$

win $\rightarrow +9$ lose $\rightarrow -100$

$a = \sqrt{9} = 3$ $b = \sqrt{100} = 10$

III. Finding Radius (circle)

A. ON the equation

r is the square root of the number
on the right of =.

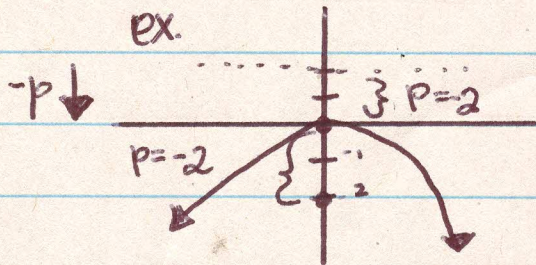
ex. $(x+5)^2 + (y-7)^2 = 9$
 $(h,k) = (-5, 7)$ $r = \sqrt{9} = 3$

ex. $x^2 + (y+8)^2 = 144$
 $(h,k) = (0, -8)$ $r = \sqrt{144} = 12$

IV. Finding p (parabola)

A. On a graph,

p is distance from center to or focus
 directrix



B. On the equation
 when # is in
 front of not-squared
 variable

$$8(x-3) = (y-2)^2$$

Divide it by 4

$$p = 8 \div 4 = 2$$

when # is in front
 of squared variable

ex. $(x-3) = \frac{1}{8} (y-2)^2$

Flip # as fraction & divide by 4

$$\frac{1}{8} \xrightarrow{\text{flip}} 8 \div 4 = 2$$

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

↑ in front of 2
 Flip first!

$$p = -\frac{3}{2} \rightarrow -\frac{3}{2} \div 4 = -\frac{3}{2} \cdot \frac{1}{4}$$

$$p = -\frac{3}{8}$$

$$p = -\frac{1}{6}$$

↓ not 2

$$4x / \frac{4}{5}(x+6) = (y-1)^2$$
$$p = \frac{4}{5} : 4 = \frac{4}{5} \cdot \frac{1}{4} = \frac{4}{20} = \frac{1}{5}$$