

Precalc - BE | Monday 3-1-10

① Write the h, k form of the equation of the circle. Then graph it.

$$x^2 + y^2 + 6x - 8y + 18 = 0$$

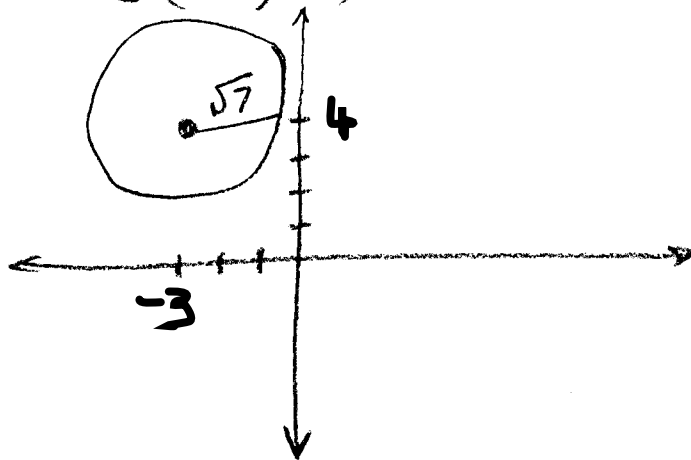
Ans

$$x^2 + 6x + \boxed{} + y^2 - 8y + \boxed{} = -18 + \boxed{} + \boxed{}$$

$$\begin{array}{ccccccc} x^2 + 6x + 3^2 & + & y^2 - 8y + 4^2 & = & -18 + 9 + 16 \\ \downarrow & & \downarrow & & \downarrow & & \downarrow \end{array}$$

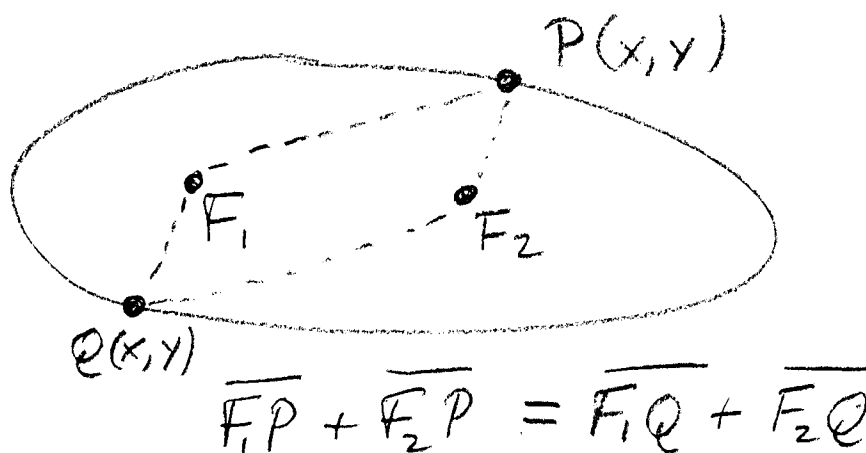
$$\boxed{(x+3)^2 + (y-4)^2 = 7}$$

$$C(-3, 4) \quad r = \sqrt{7}$$

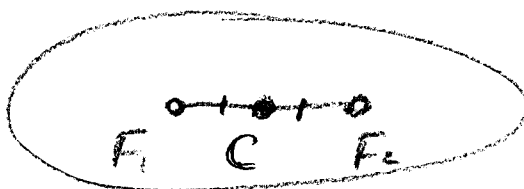


Ch. 10-3 Ellipses

Ellipse $\Rightarrow$ Set of all points (in a plane) whose distances from 2 points (the foci = plural of focus) are a constant sum.

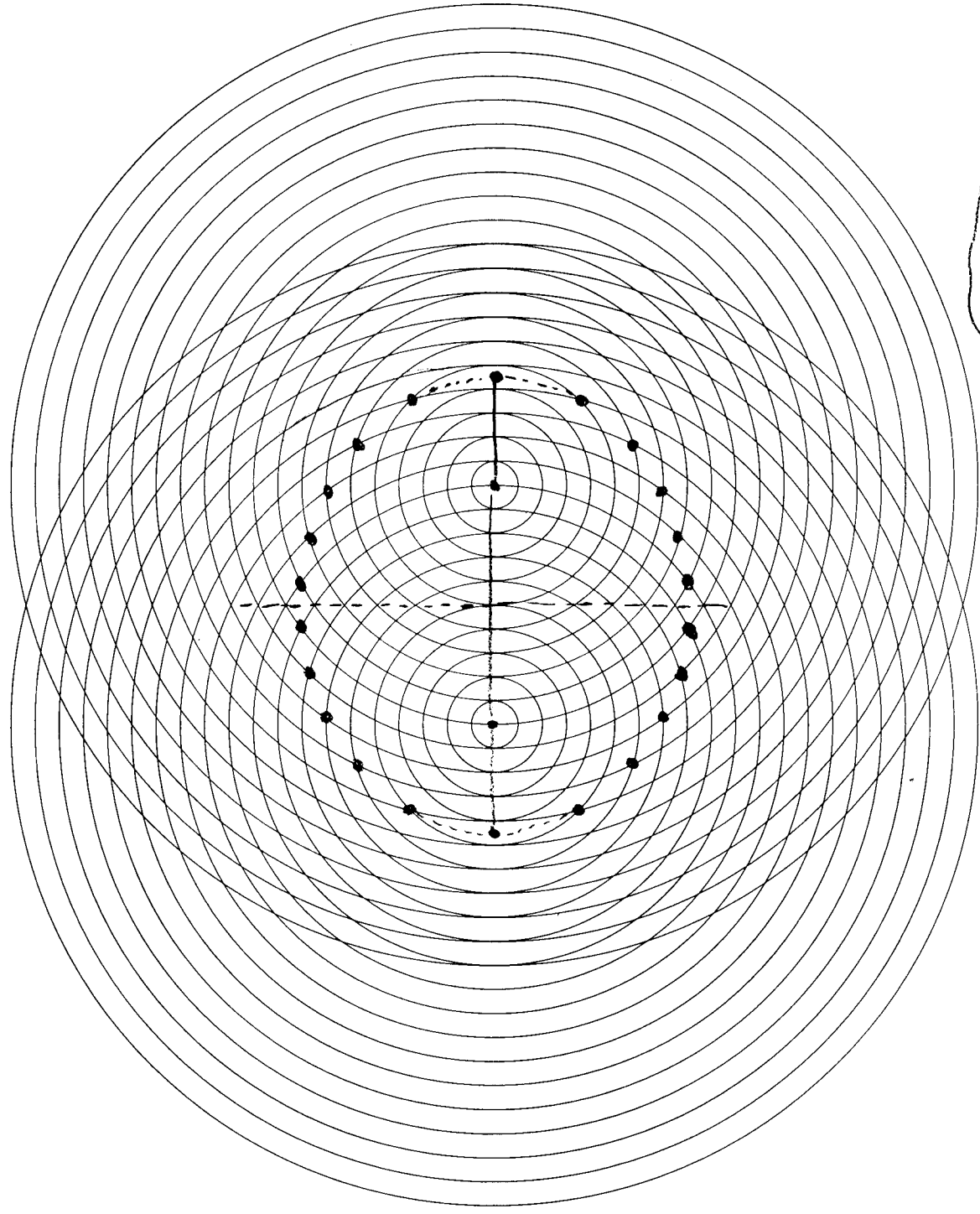


Center of ellipse the midpoint of the line connecting the 2 foci



Conic Paper Exercise — draw ellipse
String Exercise ————— draw ellipse

Ellipse
Sum of Distances
from Foci = 19

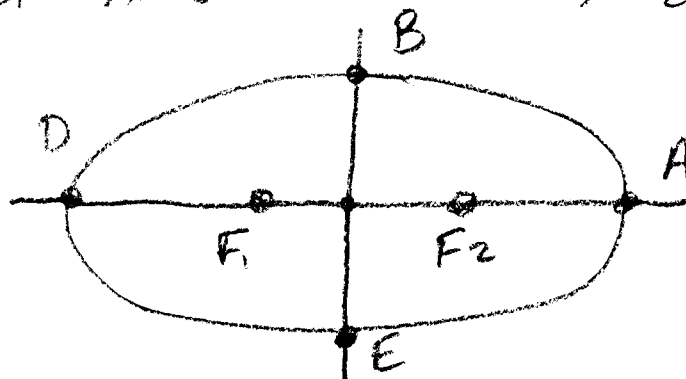


Conic Graph Paper
(overlapping circles)

An ellipse has 2 Axes of symmetry

Major Axis (longer) $\Rightarrow \overline{AD}$

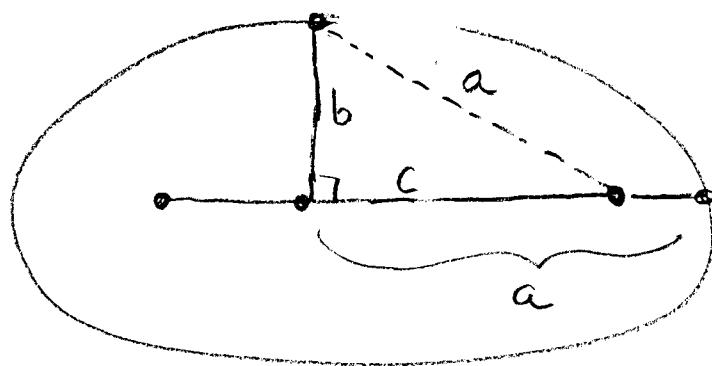
Minor Axis (shorter) $\Rightarrow \overline{BE}$



A, B, D, E are Vertices (end points of the Axes)

$\frac{1}{2}$ of major axis = Semi-major axis = a

$\frac{1}{2}$ of minor axis = Semi-minor axis = b



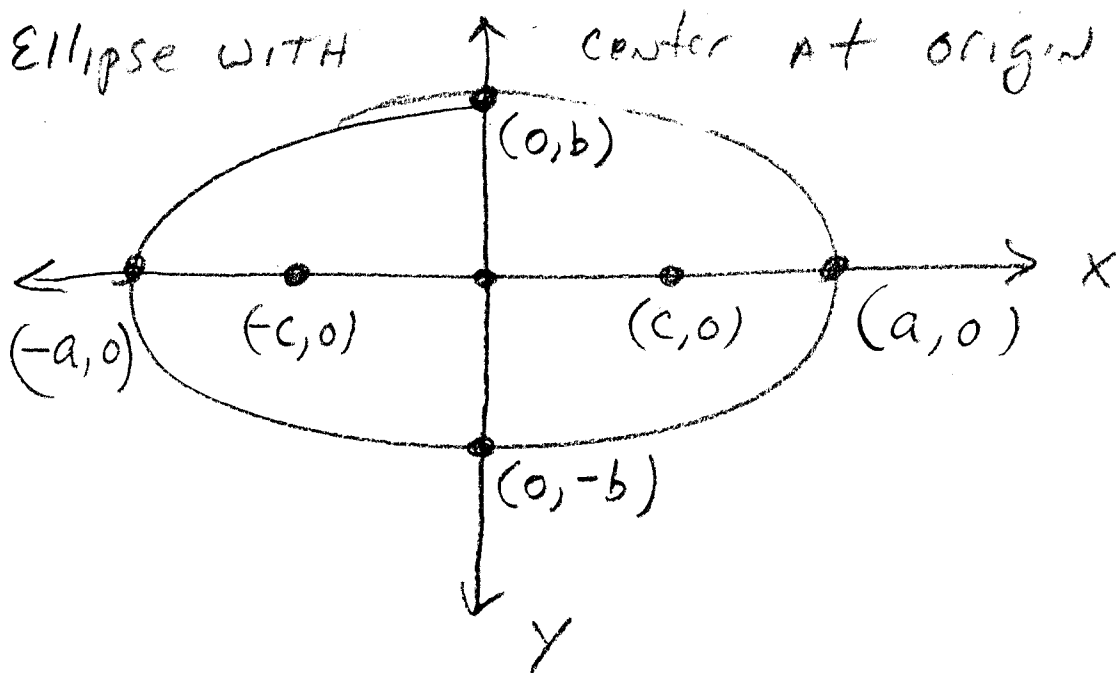
$$c^2 + b^2 = a^2$$



Midpoint to Focus

$\therefore$ Distance Between Foci = $2c$

SEE PG 632



$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$$

h, k form where $h \Rightarrow$ horizontal shift
 $k \Rightarrow$ vertical shift
 (of center)

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

Center (h, k)

$$c^2 = a^2 - b^2$$

Minor axis $x = h$

Major axis $y = k$

See TABLE Pg 634

Homework: Read CH 10-3