BE-Alg.2

Monday 3-12-12

① What are the 4 "conic sections"?

② What is the distance between any two points on the x-y coordinate plane? $(x_1, y_1), (x_2, y_2)$

$d = ?$

RECALL: 4 CONIC SECTIONS:

• PARABOLAS, • CIRCLES • ELLIPSES • HYPERBOLAS

↓

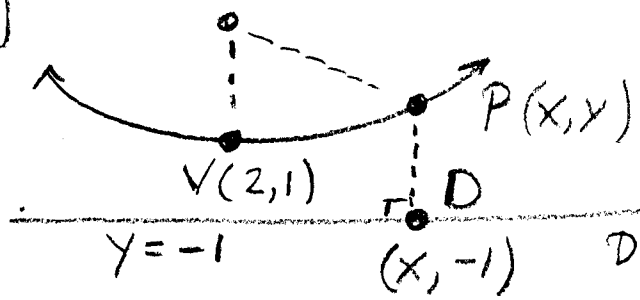
"the locus of points that are the SAME DISTANCE from A point (focus) AND A LINE (directrix)"

Where did the formula for ANY ↷ ↶ parabola come from?

The distance formula $d = \sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$

RUN^2 + RISE^2

EX PG 419



(x_1, y_1), (x_2, y_2) ANY 2 POINTS ON X-Y COORDINATE PLANE

$$\overline{FP} = \overline{PD}$$

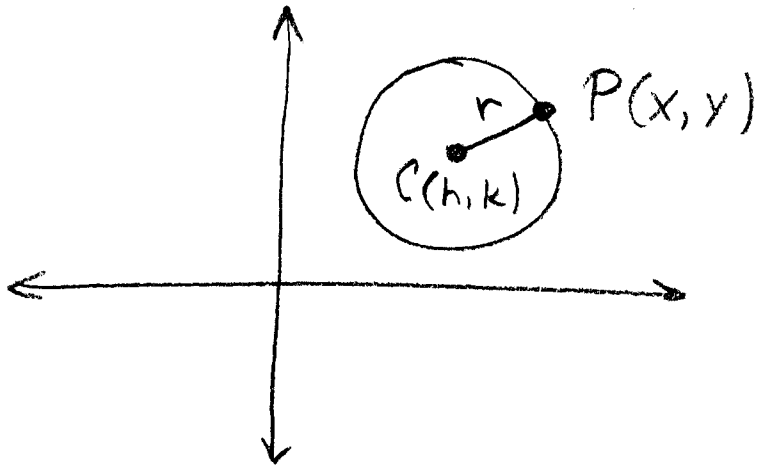
$$\sqrt{(x-2)^2+(y-3)^2} = \sqrt{(x-x)^2+(y+1)^2}$$

$$(x-2)^2+(y-3)^2 = (0)^2+(y+1)^2$$

$$\frac{1}{8}(x-2)^2+1 = y$$

Vertex Form OF PARABOLA $\boxed{a(x-h)^2+k=y}$

Lets use the distance formula again... to find the equation of any circle!



Lets call the center coordinates (h, k)

Note: the center is the "focus" of the circle.

Using the distance formula

$$\sqrt{(x-h)^2 + (y-k)^2} = \sqrt{r^2}$$

$$\therefore \boxed{(x-h)^2 + (y-k)^2 = r^2}$$

(Ex) Eq. of circle with center $(-5, 1)$, $r = 8$

$$\boxed{(x+5)^2 + (y-1)^2 = 64}$$

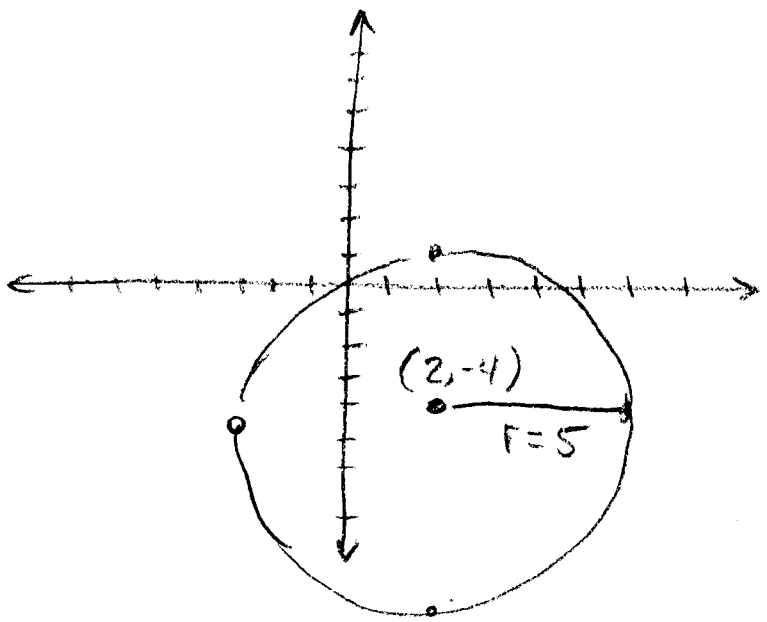
GRAPH THE EQUATION of the circle that is NOT IN STANDARD (h, k) form:

EX 5 Pg 428 $x^2 + y^2 - 4x + 8y - 5 = 0$

$x^2 - 4x + \{2^2\} + y^2 + 8y + \{4^2\} = 5 + \{4\} + \{16\}$

$\boxed{(x-2)^2 + (y+4)^2 = 25}$

$\therefore C(2, -4)$ $r = 5$



Homework: • Pg. 428/9 # 1-4
• Read Ch. 8-3, Circles.