Nonlinear Systems of Equations

NonlinearSysEqns.tns

Name _____

Class _____

Problem 1 – Numbers of possible intersection points

How many intersection points are possible for a:

- line and circle _____
- line and hyperbola _____

Conjecture:

- line and parabola _____
- line and ellipse _____

How many intersection points are possible for a

- hyperbola and circle _____
- Conjecture:

- hyperbola and parabola _____

Problem 2 – Two parabolas

Sketch the graphs you made on your handheld, showing how two parabolas can intersect at 0, 1, 2, 3, and 4 points.

Problem 3 – Solving nonlinear systems by graphing

For each system, first write how many solutions are possible. Then solve each system by graphing. Sketch the graphs below and write the solutions, rounded to the nearest hundredth.

1. $\begin{cases} x^2 + y^2 = 25 \\ 2x^2 + 6y^2 = 18 \end{cases}$

2. $\begin{cases} x + y = 3 \\ y^2 - 8x = 0 \end{cases}$

3. $\begin{cases} x^2 - y^2 = 4 \\ y + x^2 = -8x - 19 \end{cases}$

4. $\begin{cases} x^2 + y^2 = 15 \\ y + 6 = x^2 \end{cases}$