

**Secondary Math III**  
**Non-Linear Systems of Equations**  
 Assignment 12.5

Name \_\_\_\_\_  
 Period \_\_\_\_\_

*Determine the family of equations these belong to... i.e. circles, parabolas, lines.*

1.  $f(x) = 3x^2 + 2y^2 = 12$

2.  $x = 4y$

3.  $g(x) = x^2 - y = 2$

4.  $y = x^2 + 6x + 9$

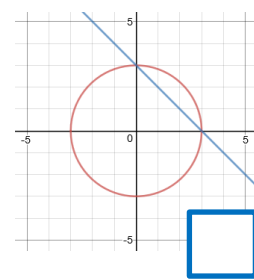
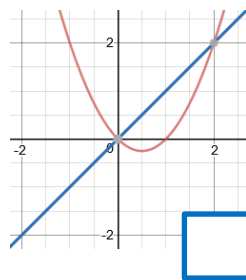
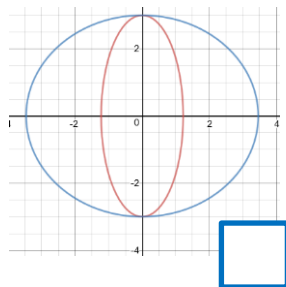
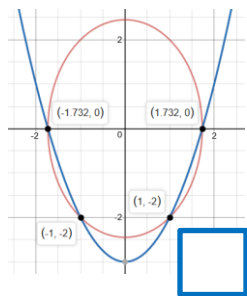
*Place the number of the set of equations that match the graph in the box next to the graph.*

5.  $\begin{cases} x + y = 3 \\ x^2 + y^2 = 9 \end{cases}$

6.  $\begin{cases} 2x^2 + y^2 = 6 \\ x^2 - y = 3 \end{cases}$

7.  $\begin{cases} 6x^2 + y^2 = 9 \\ 3x^2 + 4y^2 = 36 \end{cases}$

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



*Solve the system using substitution. Check answer(s)!*

9.  $\begin{cases} x^2 - x = y \\ y = x \end{cases}$

10.  $\begin{cases} y = x^2 + 6x \\ 12x = 3y \end{cases}$

11.  $\begin{cases} y = x^2 + 6x + 9 \\ x + y = 3 \end{cases}$

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

*Solve the system using elimination or a combination of elimination and substitution.*

$$13. \begin{cases} 3x^2 + 2y^2 = 12 \\ x^2 + 2y^2 = 4 \end{cases}$$

$$14. \begin{cases} 2x^2 + 3y^2 = 6 \\ x^2 + 3y^2 = 3 \end{cases}$$

$$15. \begin{cases} 5x^2 - 2y^2 = -13 \\ 3x^2 + 4y^2 = 39 \end{cases}$$

$$16. \begin{cases} x^2 + y^2 = 4 \\ x^2 - y = 2 \end{cases}$$

$$15. \begin{cases} -2x^2 + y^2 = -6 \\ x^2 - y = 3 \end{cases}$$

$$16. \begin{cases} 6x^2 + y^2 = 9 \\ 3x^2 + 4y^2 = 36 \end{cases}$$

17. The sum of two numbers is 16. The sum of their squares is 130. Find the two numbers.

18. The difference of two numbers is 2. The sum of their squares is 100. Find the two numbers.