

Honors Algebra 2
Solving Non-Linear Systems

Name: _____

Date: _____

Solve the systems by graphing on graph paper.

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

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

$$\begin{cases} y = x^2 - 4x - 10 \\ y = -x^2 - 2x + 14 \end{cases}$$

$$\begin{cases} x^2 + y^2 = 25 \\ x - y = 1 \end{cases}$$

$$\begin{cases} x + y = 1 \\ (x - 1)^2 + (y + 2)^2 = 10 \end{cases}$$

$$\begin{cases} 2x + y = 4 \\ (x + 1)^2 + (y - 2)^2 = 4 \end{cases}$$

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

Solve the systems by substitution.

$$\begin{cases} 2x + y = -5 \\ y = x^2 + 6x + 7 \end{cases}$$

$$\begin{cases} y = x^2 + 4x + 5 \\ y = x^2 + 2x - 1 \end{cases}$$

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

$$\begin{cases} xy = -12 \\ x - 2y + 14 = 0 \end{cases}$$

Solve the systems by elimination.

$$\begin{cases} x^2 + y^2 = 13 \\ x^2 - y^2 = 5 \end{cases}$$

$$\begin{cases} x^2 - 4y^2 = -7 \\ 3x^2 + y^2 = 31 \end{cases}$$

$$\begin{cases} 3x^2 + 4y^2 - 16 = 0 \\ 2x^2 - 3y^2 - 5 = 0 \end{cases}$$

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

Use desmos.com to graph the system and find the solution.

$$\begin{cases} 2x^2 + xy = 6 \\ x^2 + 2xy = 0 \end{cases}$$

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

$$\begin{cases} \frac{3}{x^2} + \frac{1}{y^2} = 7 \\ \frac{5}{x^2} - \frac{2}{y^2} = -3 \end{cases}$$

$$\begin{cases} 4x^2 + xy = 30 \\ x^2 + 3xy = -9 \end{cases}$$

$$\begin{cases} -9x + y = 45 \\ y = x^3 + 5x^2 \end{cases}$$

$$\begin{cases} \frac{2}{x^2} + \frac{1}{y^2} = 11 \\ \frac{4}{x^2} - \frac{2}{y^2} = -14 \end{cases}$$