

EXERCISES FOR NON LINEAR INEQUALITIES

Question 1 In Exercises ?? - ??, sketch the solution to each system of nonlinear inequalities in the plane.

Problem 1.1
$$\begin{cases} x^2 - y^2 \leq 1 \\ x^2 + 4y^2 \geq 4 \end{cases}$$

Desmos link: <https://www.desmos.com/calculator/em7fhdwkqi>

Problem 1.2
$$\begin{cases} x^2 + y^2 < 25 \\ x^2 + (y - 3)^2 \geq 10 \end{cases}$$

Desmos link: <https://www.desmos.com/calculator/jtoyj9rnai>

Problem 1.3
$$\begin{cases} (x - 2)^2 + y^2 < 1 \\ x^2 + 4y^2 < 4 \end{cases}$$

Desmos link: <https://www.desmos.com/calculator/qroluyyjdj4>

Problem 1.4
$$\begin{cases} y > 10x - x^2 \\ y < x^3 + 8 \end{cases}$$

Desmos link: <https://www.desmos.com/calculator/wwfiheaag7>

Problem 1.5
$$\begin{cases} x + 2y^2 > 2 \\ x^2 + 4y^2 \leq 4 \end{cases}$$

Desmos link: <https://www.desmos.com/calculator/efja6dgboj>

Problem 1.6
$$\begin{cases} x^2 + y^2 \geq 25 \\ y - x \leq 1 \end{cases}$$

Desmos link: <https://www.desmos.com/calculator/kacsumip6p>