

10.1 Recitation Exercises

1. Solve the following systems:

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

b)
$$\begin{cases} -\frac{1}{3}x - \frac{1}{12}y = -1 \\ \frac{2}{3}x + \frac{1}{6}y = 3 \end{cases}$$

c)
$$\begin{cases} -\frac{1}{10}x + \frac{1}{2}y = 4 \\ 2x - 10y = -80 \end{cases}$$

2. If the following system is dependent, find the value of $a + b$

$$\begin{cases} \frac{3}{2}x - \frac{1}{3}y = \frac{b}{7} \\ \frac{a}{4}x - y = 2 \end{cases}$$

3. If the system of linear equations $\begin{cases} -4x + 4y + 3 = 0 \\ 2x - ky + 2 + k = 0 \end{cases}$ is inconsistent, then $k =$

A) 2 B) 3 C) 4 D) 5 E) 6

4. The sum of two numbers is twice their difference. The larger number is 6 more than twice the smaller. Find the numbers.

10.4 Recitation Exercises

1. The following system of non-linear equations $\begin{cases} 5x^2 + 3y^2 = 23 \\ x^2 - y^2 = 3 \end{cases}$ has:

- A) No solutions.
- B) One solution.
- C) Two solutions.
- D) Three solutions.
- E) Four solutions.

2. Solve the following system $\begin{cases} 2x^2 + xy + y^2 = 4 \\ 3x^2 + 2xy + y^2 = 4 \end{cases}.$

3. Find the point(s) of intersection of the circle $(x - 1)^2 + (y - 2)^2 = 8$ and the line $y = 2x + 2$.

4. Find the solution set of the system $\begin{cases} \frac{2}{x} - \frac{3}{y} = 1 \\ \frac{7}{y} - \frac{4}{x} = 1 \end{cases}.$

5. Solve the following system $\begin{cases} x + \sqrt{y} = 0 \\ y^2 - 4x^2 = 12 \end{cases}.$