Math 301 : In-class exercise #1

How any solutions to the following equations or systems of equation have? Some equations may have no solutions, exactly one solution or an infinite number of solutions. Give an geometric interpretation if you can.

- If the problem has exactly one solution, please provide that solution, either as a scalar, or as a pair of numbers.
- If the system has an infinite number of solutions, try to characterize the solutions as best as you can.
- If the system doesn't appear to have a solution, show why you think there is no solution. You do not have to provide a "best" answer.

1. $$3x = 5$$

2. $$\begin{aligned} 2x + 4y &= 1 \\ x - 2y &= 3 \end{aligned}$$

3. $$\begin{aligned} 2x - y &= 1 \\ 4x - 2y &= 3 \end{aligned}$$

4. $$\begin{aligned} 2x - y &= 1 \\ 4x - 2y &= 2 \end{aligned}$$

5. $$\begin{aligned} 2x + y &= 1 \\ 4x - 3y &= 2 \\ x + y &= 5 \end{aligned}$$

6. $$\begin{aligned} 2x + y &= 1 \\ 3x + 2y &= 6 \\ x + y &= 5 \end{aligned}$$

7.

$$4x + 5y = 1$$

8.

$$\begin{aligned} 3x &= 1 \\ x &= 7 \end{aligned}$$

9.

$$\begin{aligned} 2x &= 4 \\ x &= 2 \end{aligned}$$

10.

$$0x = 6$$

11.

$$6x = 0$$

12.

$$0x = 0$$

13.

$$\begin{aligned} 2x &= 4 \\ 0x &= 0 \end{aligned}$$