Problem 1. (10pt) Determine if the system of equations below has a solution. If it does, find it; if not, explain why.

$$x + y = 5$$
$$x - y = 9$$

Problem 2. (10pt) Determine if the system of equations below has a solution. If it does, find it; if not, explain why.

$$15x - 6y = 10$$
$$-5x + 2y = -8$$

Problem 3. (10pt) Determine if the system of equations below has a solution. If it does, find it; if not, explain why.

$$5x + 3y = 7$$
$$3x - 2y = -11$$

Problem 4. (10pt) Determine if the system of equations below has a solution. If it does, find it; if not, explain why.

$$5x - 6y = 3$$
$$2x + 3y = 3$$