

Problem 1. Solve the following system of equations:

$$3x + 2y = 11 \tag{1}$$

$$5x - 4y = 11 \tag{2}$$

Solution. We have to find x and y in such a way that (1) and (2) are satisfied simultaneously. The method consists on *eliminating* one of the variables using both equation, multiplying them by the right constants. More precisely, if we multiply the first equation by 2 we obtain

$$6x + 4y = 22 \tag{3}$$

$$5x - 4y = 11 \tag{4}$$

and now we sum both equations (3) and (4) to get $11x = 33$, which means that $x = 3$. Now that we have x , we can find y simply replacing any of the equations (1) or (2). We choose (1), so we get $9 + 2y = 11$, which implies that $2y = 2$, and then $y = 1$. Summarizing

$$x = 3, y = 1$$

is the solution. □