

Pair of Linear Equations in Two Variables

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This is Problem-1.1 from Exercise 3.2

1. 10 students of Class X took part in a mathematics quiz.If the number of girls is 4 more than the number of boys,find the number of boys and girls who took part in the quiz.

Solution:

Let number of girls be x and number of boys be y .

$$x + y = 10 \quad (1)$$

$$-x + y = -4 \quad (2)$$

$$(3)$$

It can be written as

$$\begin{pmatrix} 1 & 1 & 10 \\ -1 & 1 & -4 \end{pmatrix}$$

$$R_2 \rightarrow R_1 + R_2$$
$$\begin{pmatrix} 1 & 1 & 10 \\ 0 & 2 & 6 \end{pmatrix}$$

$$R_1 \rightarrow R_2 - 2R_1$$
$$\begin{pmatrix} -2 & 0 & -14 \\ 0 & 2 & 6 \end{pmatrix}$$

$$R_1 \rightarrow R_1 / (-2)$$
$$R_2 \rightarrow R_2 / 2$$
$$\begin{pmatrix} 1 & 0 & 7 \\ 0 & 1 & 3 \end{pmatrix}$$

Therefore $x=7$ and $y=3$.