Pair of Linear Equations in Two Variables

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This is Problem-5 from Exercise 3.2

1. Half the perimeter of a rectangular garden whose length is 4m more than its width is, 36m. Find the dimensions of the garden.

   Solution: Length = y
   Width = x
   Also length = 4+x
   Half perimeter of rectangle = l+b
   Therefore the equations can be written as :

   $$x + y = 36 \tag{1}$$
   $$x - y = -4 \tag{2}$$
   $$\tag{3}$$

   it can be written as

$\mathrm{R}_1 \to \frac{R_1}{2}$

$$\begin{pmatrix} 1 & 0 & 16 \\ 1 & -1 & -4 \end{pmatrix}$$

$\mathrm{R}_2 \xrightarrow[R_1 - R_2]{}$

$$\begin{pmatrix} 1 & 0 & 16 \\ 0 & 1 & 20 \end{pmatrix}$$

$\mathrm{R}_2 \to \frac{R_2}{2}$

$$\begin{pmatrix} 1 & 0 & 16 \\ 0 & 1 & 20 \end{pmatrix}$$

therefore x=16 and y=20
Hence the dimensions of the rectangular garden are
length = 20m
width = 16m