

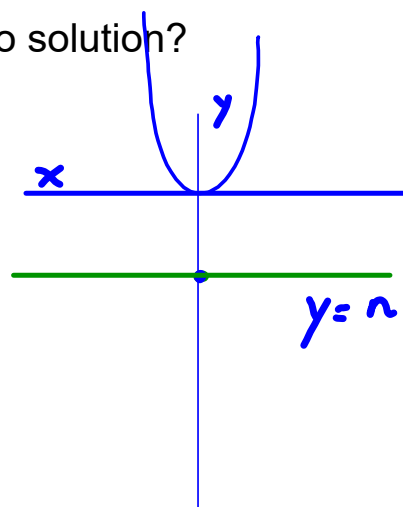
If $n < 0$, which of the following systems has no solution?

A) $y = x^2$
 $y = n$

C) $y = -x^2$
 $y = n$

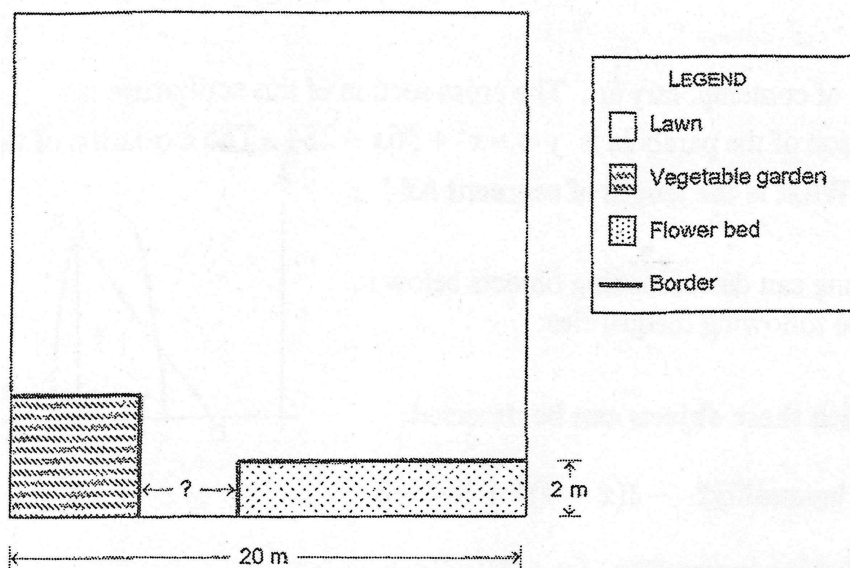
B) $y = x^2 + n$
 $y = n$

D) $y = -x^2 + n$
 $y = n$



Sabrina wants to plant a vegetable garden and a flower bed in the two corners of her back yard.

She sets up some concrete borders on two sides of the vegetable garden and on two sides of the flower bed to separate them from the lawn. The following figure shows the layout of the yard.



- The yard is square.
- The vegetable garden is square.
- the flower bed is rectangular.
- The total length of the concrete borders is 23m.
- The total area of the vegetable garden and the flower bed is 47m².

semi-linear system

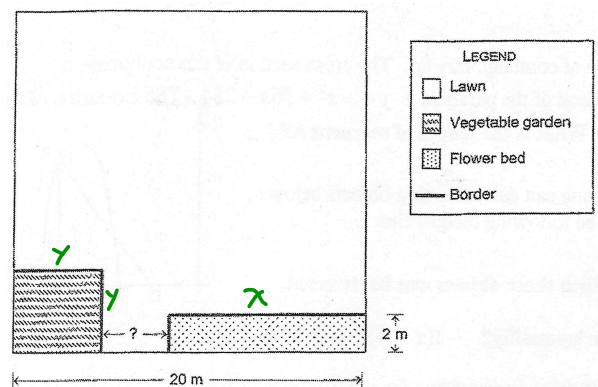
What is the distance between the vegetable garden and the flower bed?

- The total length of the concrete borders is 23m.
- The total area of the vegetable garden and the flower bed is $47m^2$

① x : length of the rectangle
 y : side length of square

$$\begin{aligned} \textcircled{2} \quad 2y + x + 2 &= 23 \\ y^2 + 2x &= 47 \end{aligned}$$

$$\begin{aligned} \textcircled{3} \quad 2y + x &= 21 \\ y^2 + 2x &= 47 \end{aligned}$$



By elimination (of x)

$$-2(2y + x = 21)$$

$$y^2 + 2x = 47$$

not like terms

$$\begin{array}{r} -4y - 2x = -42 \\ y^2 + 2x = 47 \end{array}$$

$$y^2 - 4y = 5$$

$$y^2 - 4y - 5 = 0$$

solve

By Substitution

$$x = -2y + 21$$

$$y^2 + 2x = 47$$

$$y^2 + 2(-2y + 21) = 47$$

$$y^2 - 4y + 42 = 47$$

$$y^2 - 4y - 5 = 0$$

solve

Same equation

$$y^2 - 4y - 5 = 0$$

$$(y - 5)(y + 1) = 0$$

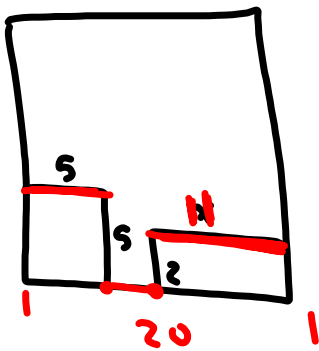
$$y - 5 = 0$$

$$\boxed{y = 5}$$

$$y + 1 = 0$$

$$\boxed{y = -1}$$

Rejected
as a length



Answer $11 + 5 = 16m$

$$20 - 16 = \underline{\underline{4m}}$$

$$\boxed{x}$$

$$2(s) + x = 21$$

$$10 + x = 21$$

$$\boxed{x = 11}$$

$$5^2 + 2(11) = 47$$

$$25 + 22 = 47$$

$$47 = 47$$