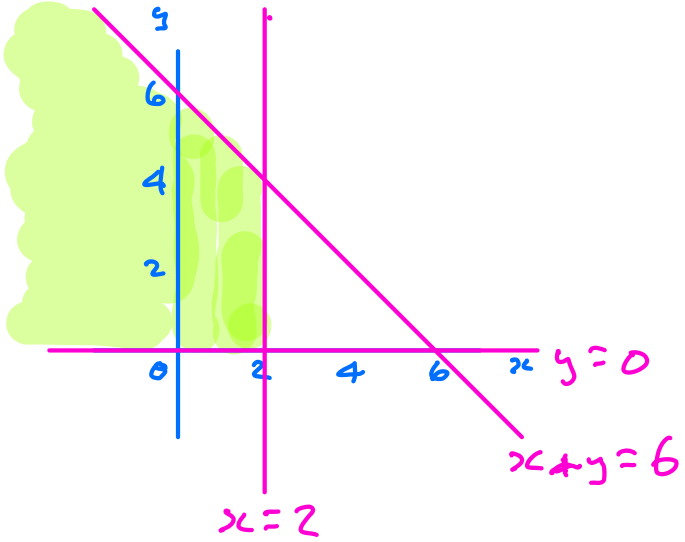
Graphical Inequalities

Example 1

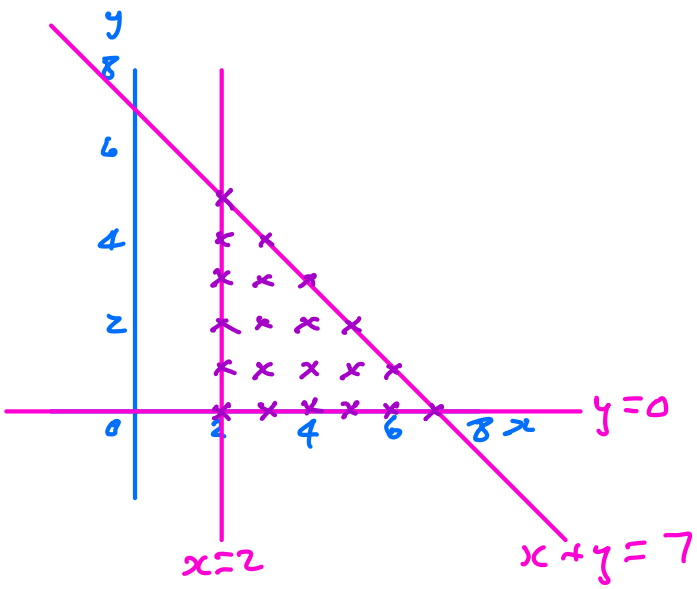


Shade the area where

$y \geq 0$

$x \leq 2$

$x + y \leq 6$



Example 2

Mark with a x all the points that satisfy

$x \geq 2$

$y \geq 0$

$x + y \leq 7$

x, y are both integers

3 **a** Draw the line $x = -2$ (as a solid line).

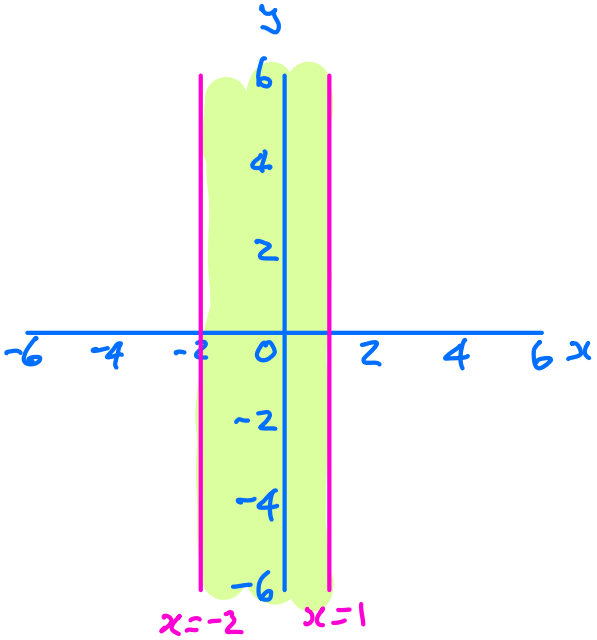
b Draw the line $x = 1$ (as a solid line) on the same grid.

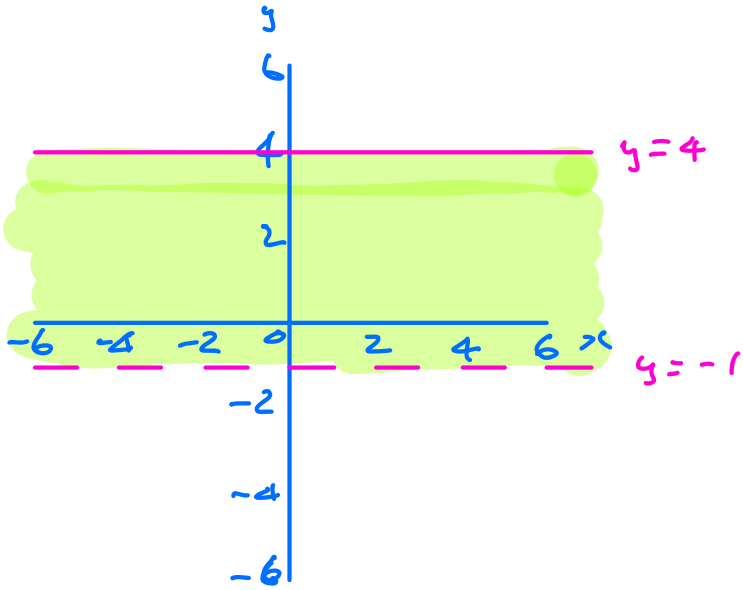
c Shade the region defined by $-2 \leqslant x \leqslant 1$.

4 **a** Draw the line $y = -1$ (as a dashed line).

b Draw the line $y = 4$ (as a solid line) on the same grid.

c Shade the region defined by $-1 < y \leqslant 4$.



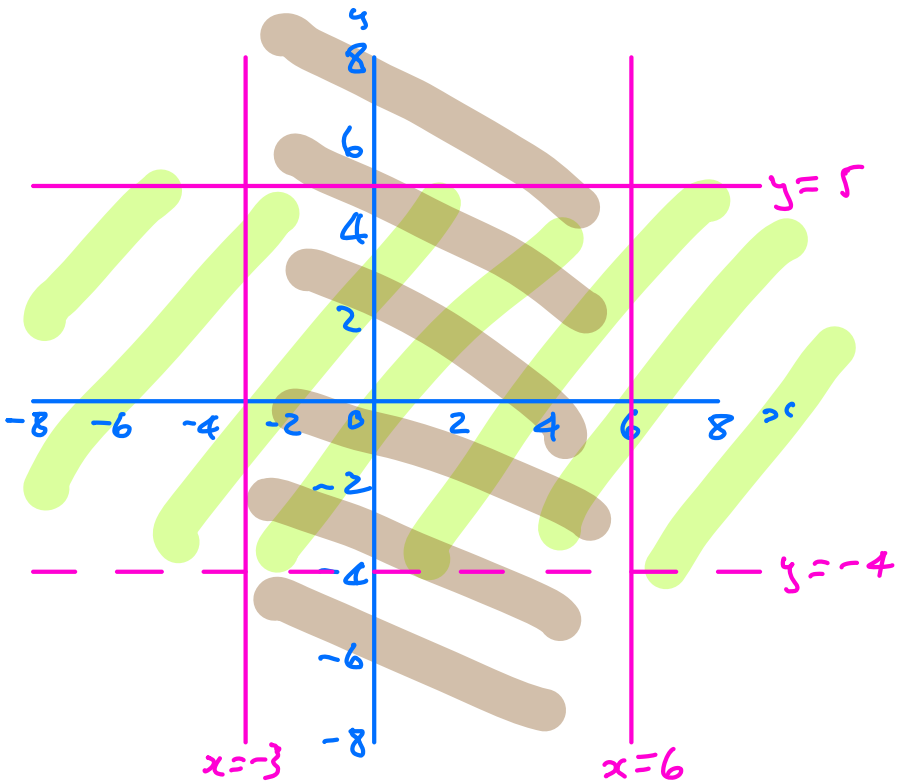


5 **a** On the same grid, draw the regions defined by these inequalities.

i $-3 \leqslant x \leqslant 6$ **ii** $-4 < y \leqslant 5$

b Are the following points in the region defined by both inequalities?

i (2, 2) **ii** (1, 5) **iii** (–2, –4)

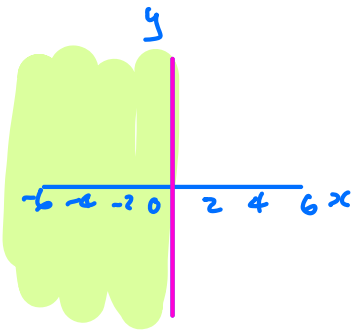


(2, 2) Yes in both regions

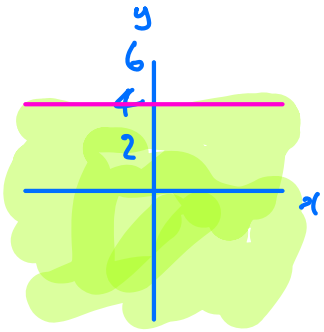
(1, 5) Yes

(-2, -4) No cannot be on dashed line

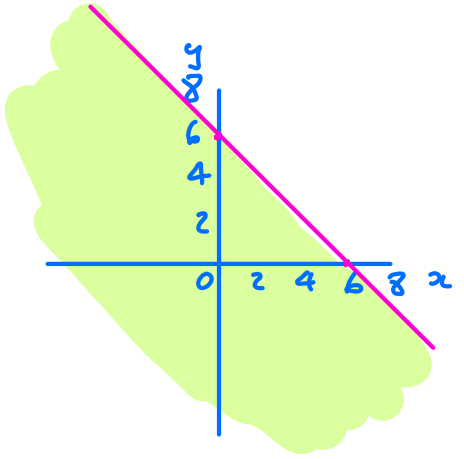
Graphical Inequalities



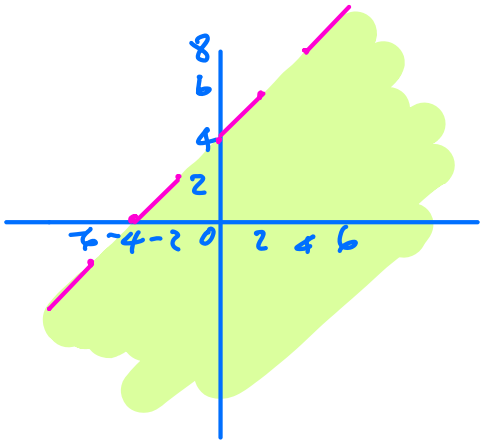
$x \leq 0$



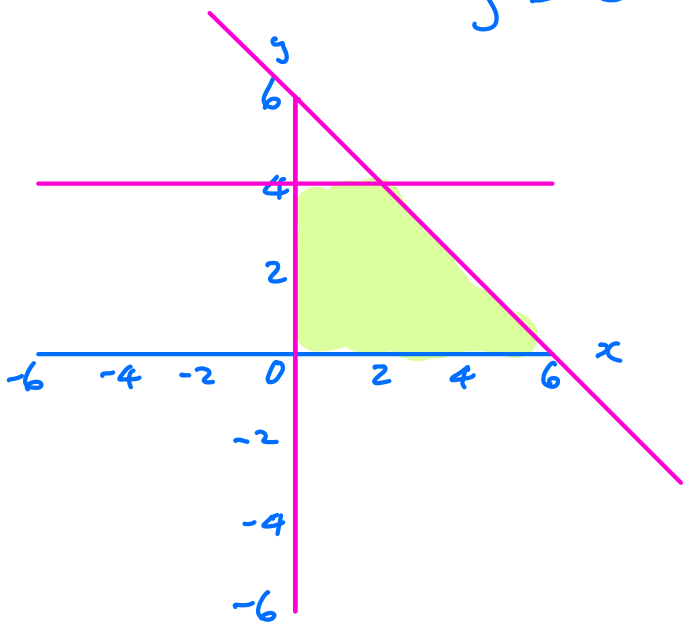
$y \leq 4$

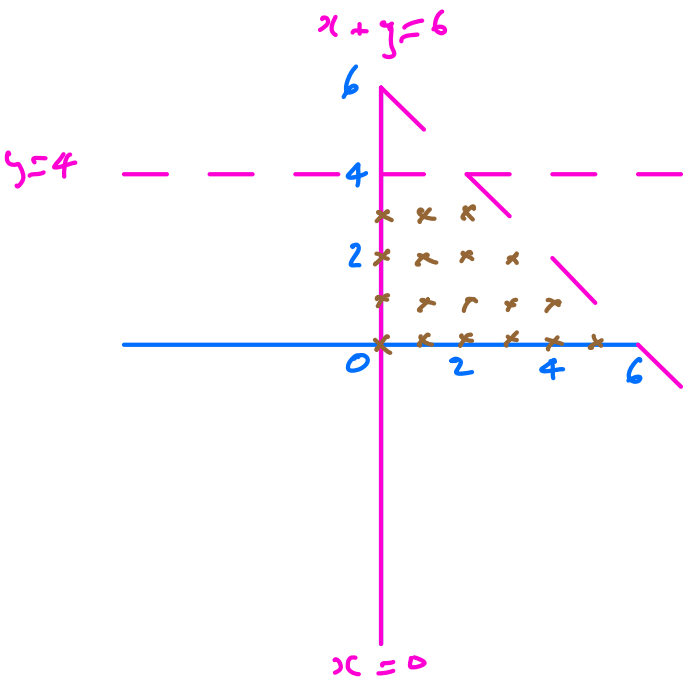


$x + y \leq 6$



$y < x + 4$





$$\begin{cases} x \geq 0 \\ y \leq 4 \\ x + y \leq 6 \\ y \geq 0 \end{cases}$$

$x \geq 0 \quad y \geq 0$

$y < 4$

$x + y < 6$

x, y are integers

Mark possibilities with an x