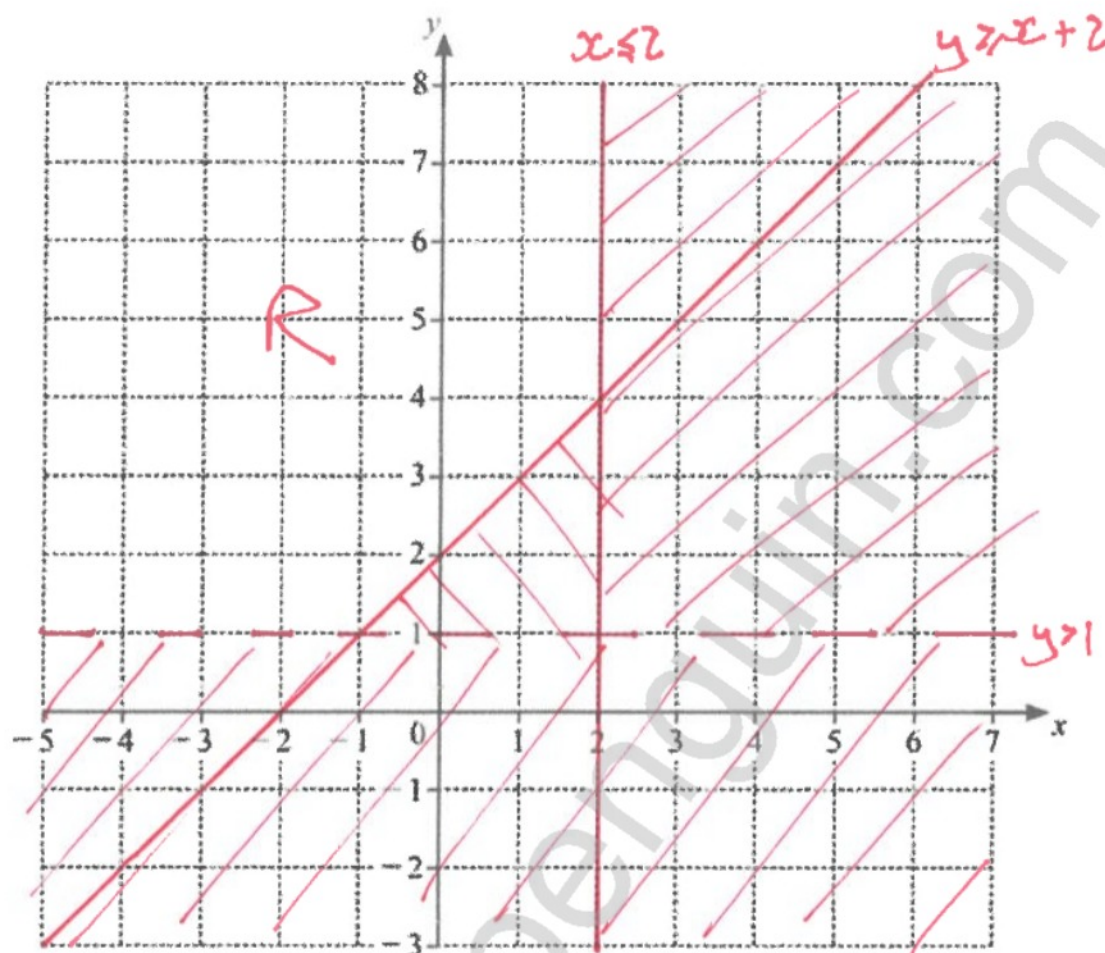




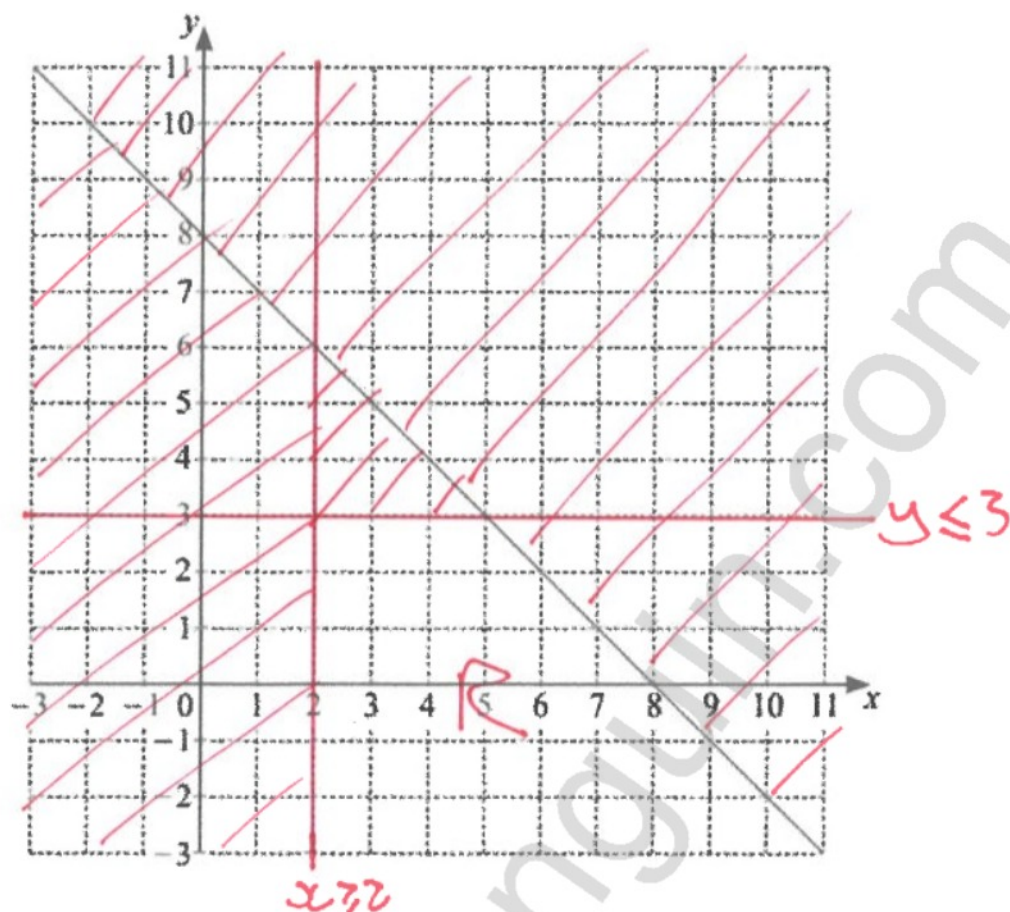
By shading the unwanted regions of the grid, draw and label the region R which satisfies these inequalities.

$$y > 1$$

↑ dotted line

$$x \leq 2$$

$$y \geq x + 2$$



The diagram shows the line $x + y = 8$.

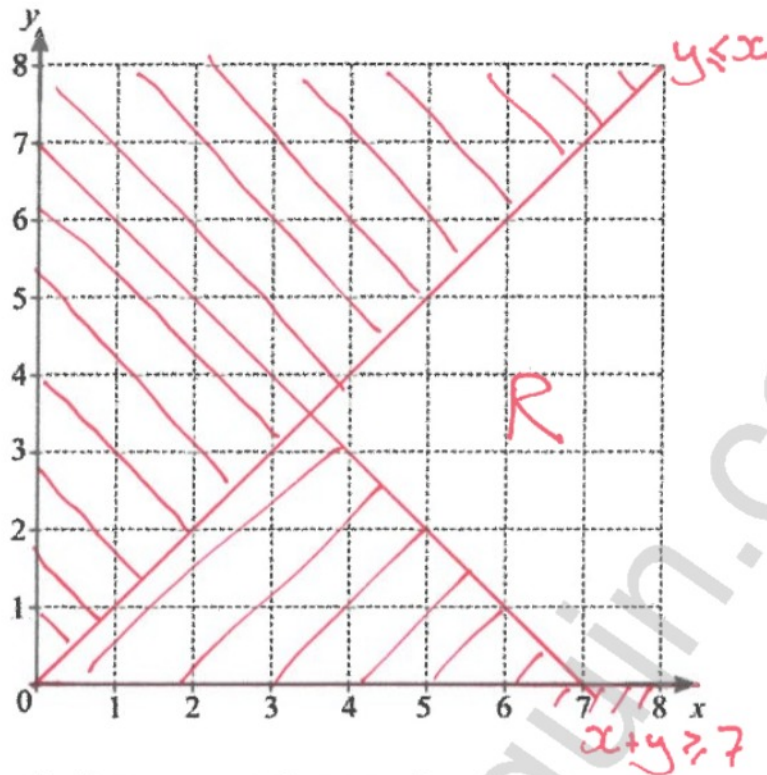
On the diagram, show clearly the region defined by these inequalities.

$$x + y \leq 8$$

$$x \geq 2$$

$$y \leq 3$$

[2]



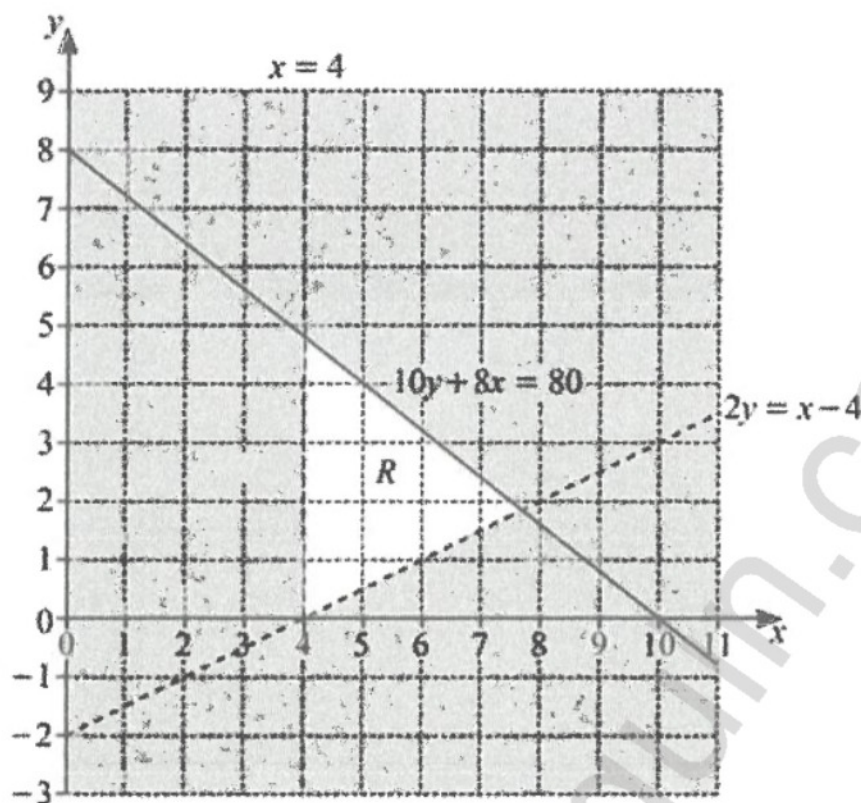
(a) On the grid, draw the lines $y = x$ and $x + y = 7$.

[3]

(b) Region R satisfies the three inequalities $y \geq 0$, $y \leq x$ and $x + y \geq 7$.
On the grid, label the region R.

[1]

(b)



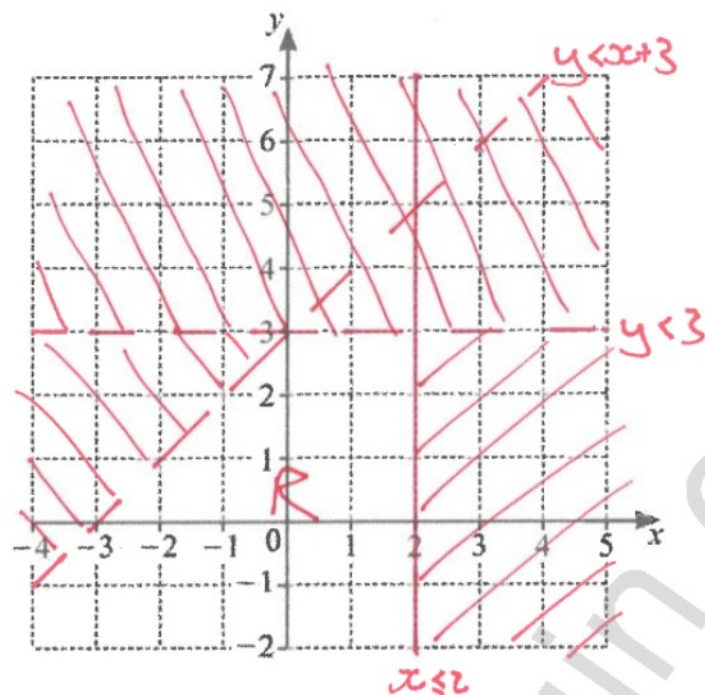
The region marked R is defined by three inequalities.

(i) Find these three inequalities.

$$x > 4$$

$$2y > x - 4$$

$$10y + 8x \leq 80 \quad [3]$$



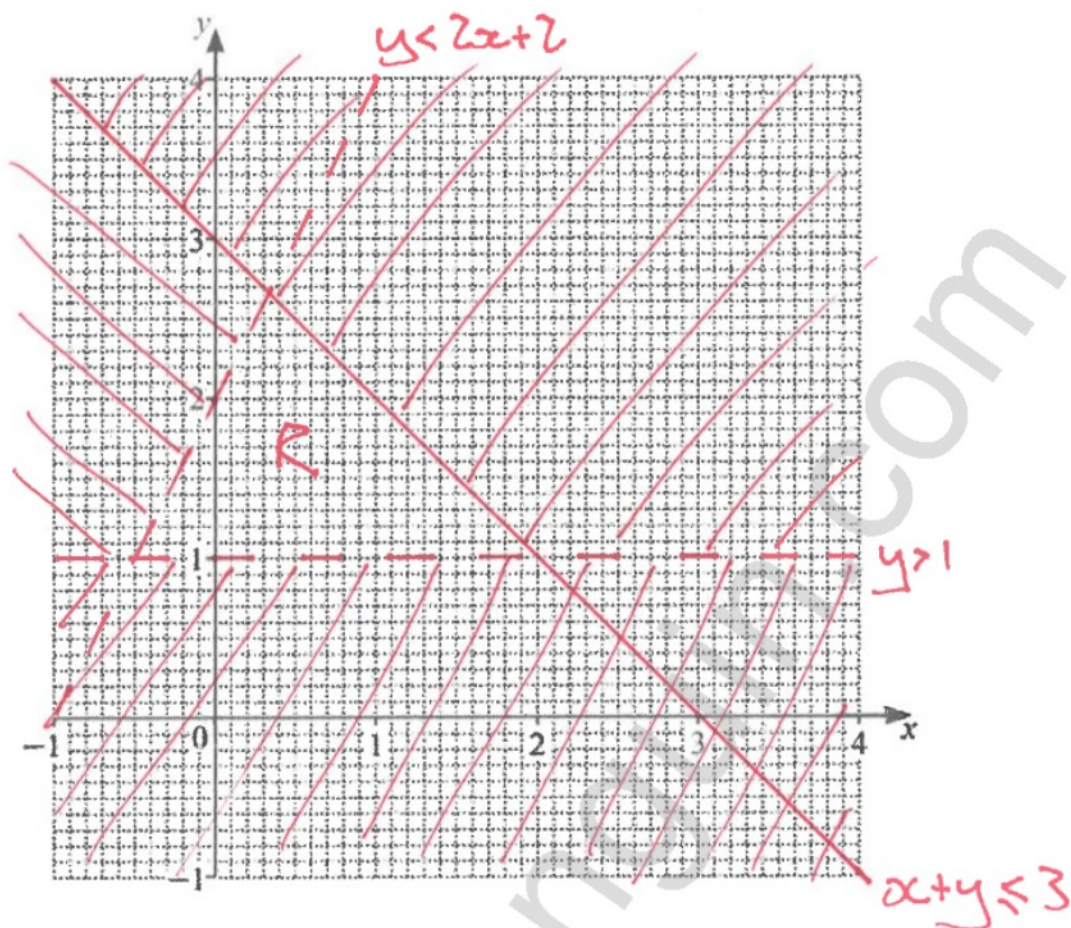
By shading the **unwanted** regions of the grid, draw and label the region R which satisfies these three inequalities.

$$y < 3$$

$$x \leq 2$$

$$y < x + 3$$

[5]

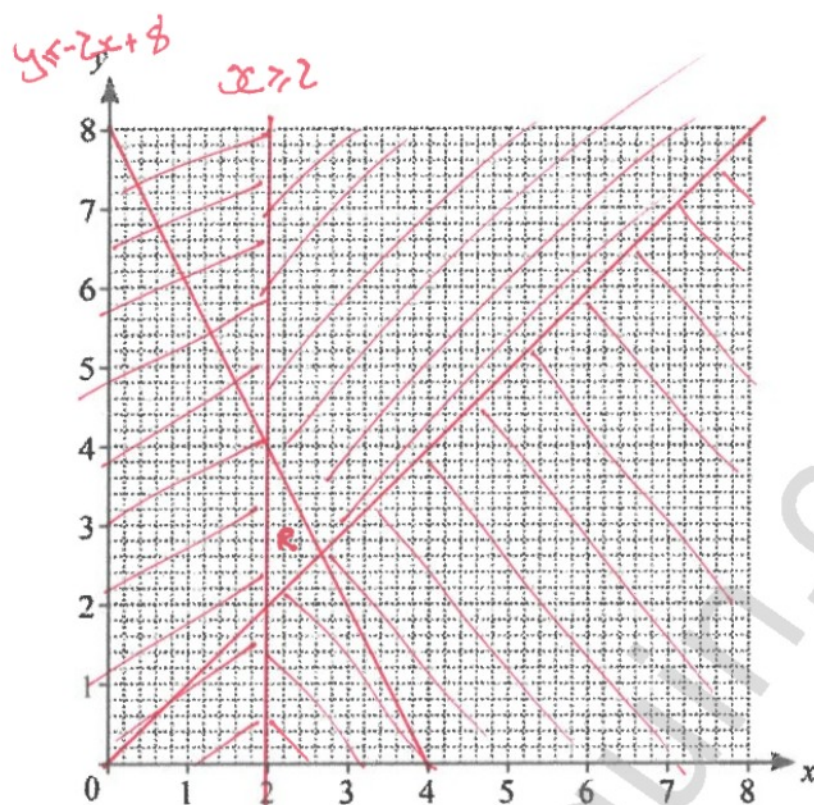


The region R satisfies these three inequalities.

$$y > 1 \quad y < 2x + 2 \quad x + y \leq 3$$

By drawing three suitable lines, and shading unwanted regions, find and label the region R .

[5]



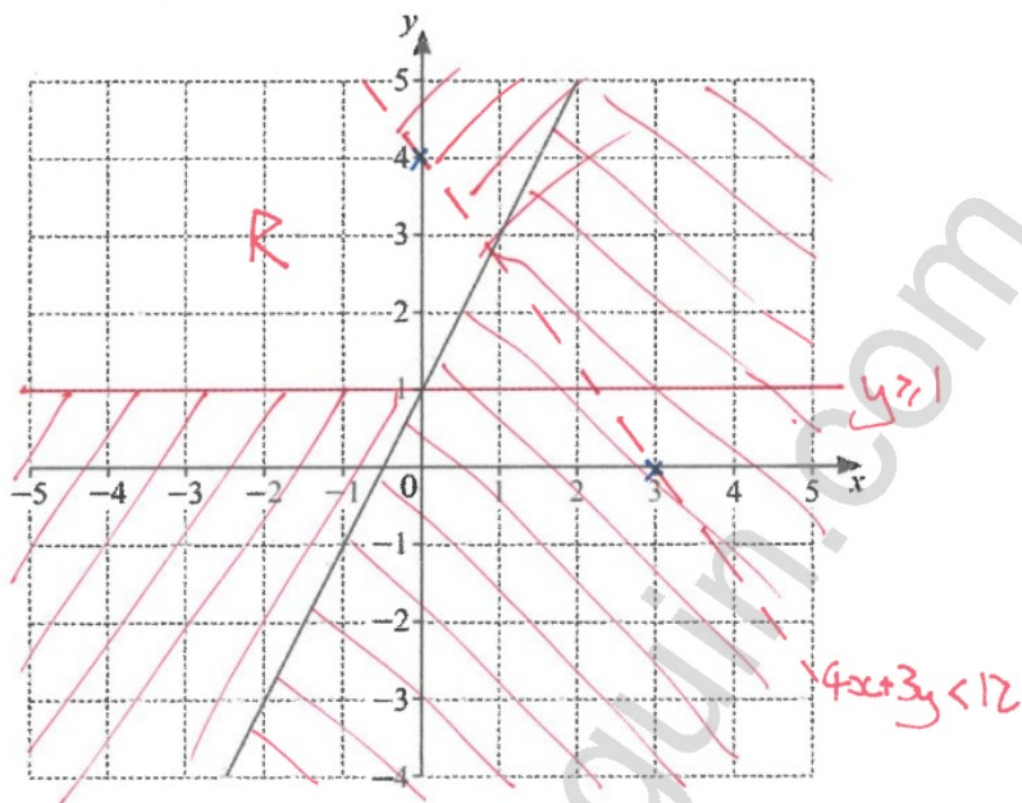
(a) By drawing suitable lines and shading unwanted regions, find the region, R , where

$$x \geq 2, \quad y \geq x \quad \text{and} \quad 2x + y \leq 8.$$

[5]

$$\hookrightarrow y \leq -2x + 8$$

- 13 The graph of $y = 2x + 1$ is drawn on the grid.



By shading the **unwanted** regions of the grid, find and label the region R which satisfies these inequalities.

$$y \geq 2x + 1$$

$$y \geq 1$$

$$4x + 3y < 12$$

$$4x + 3y = 12 \quad [4]$$

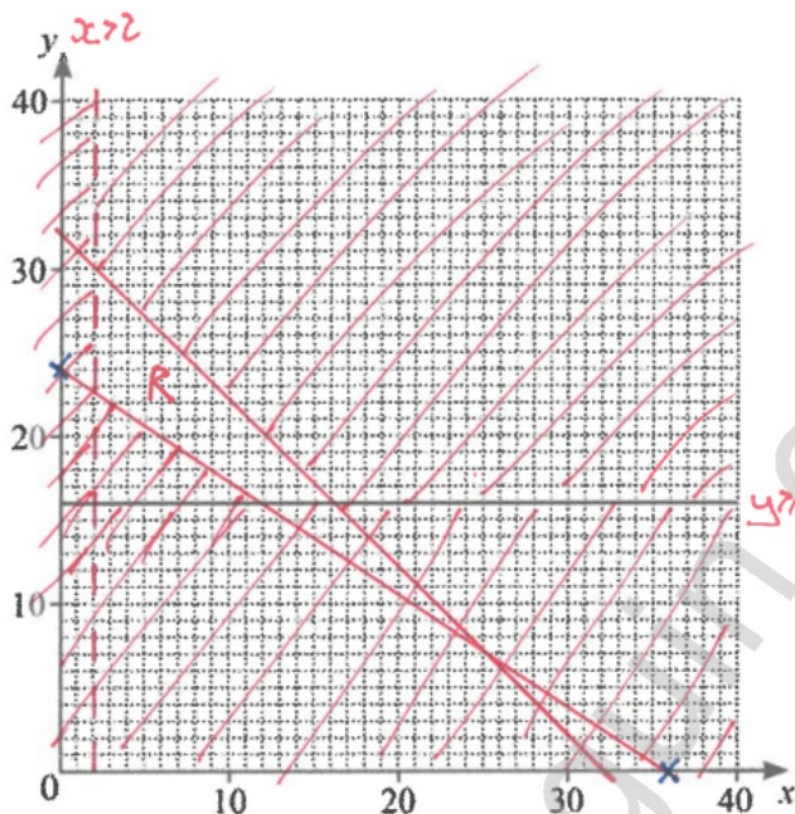
$$x=0: 3y=12$$

$$y=4 \rightarrow (0,4)$$

$$y=0: 4x=12$$

$$x=3 (3,0)$$

(c) The line $y = 16$ is drawn on the grid.



The region R satisfies the following inequalities.

$$y \geq 16$$

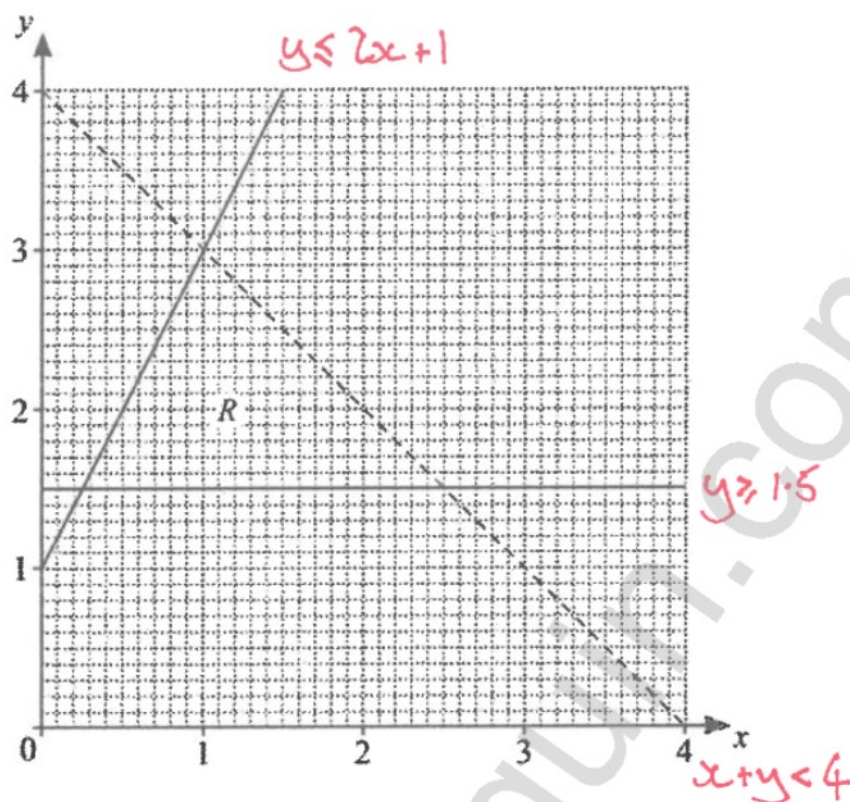
$$x > 2$$

$$2x + 3y \geq 72$$

$$y \leq 32 - x$$

- (i) By drawing three more lines and shading the region **not required**, find and label region R . [6]

$$\begin{array}{l}
 \downarrow \\
 2x + 3y = 72 \\
 \begin{array}{ll}
 x=0: & 3y = 72 \\
 & y = 24 \\
 & \underline{(0, 24)}
 \end{array}
 \end{array}
 \qquad
 \begin{array}{ll}
 y=0 & 2x = 72 \\
 & x = 36 \\
 & \underline{(36, 0)}
 \end{array}$$



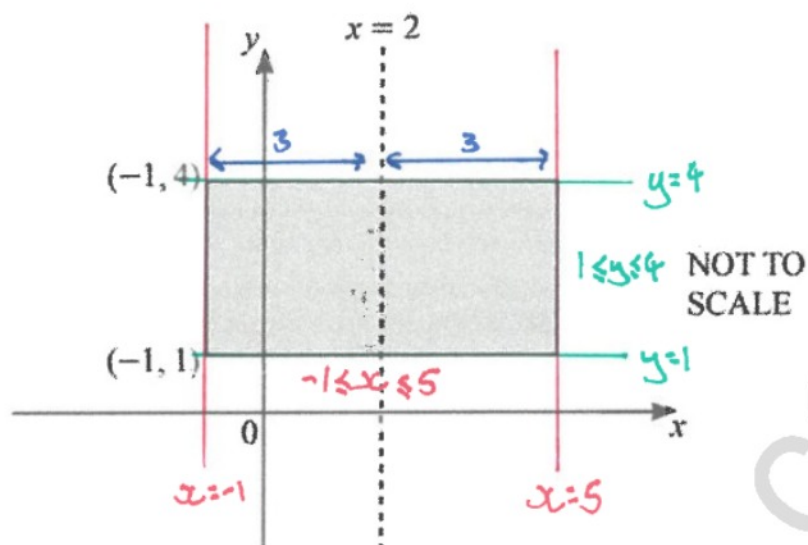
Write down the three inequalities that define the region R .

$$y \geq 1.5$$

$$x + y < 4$$

$$y \leq 2x + 1$$

[4]

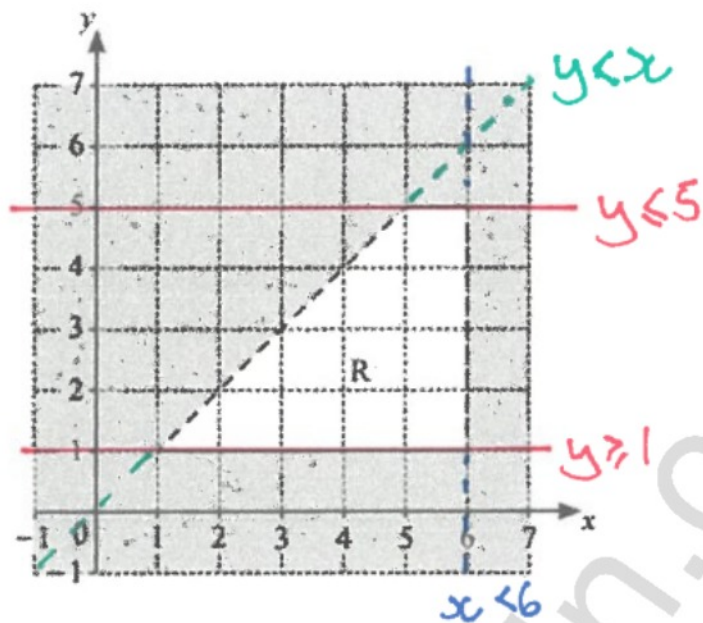


The diagram shows a rectangle with a line of symmetry at $x = 2$.
Two vertices of the rectangle are at $(-1, 1)$ and $(-1, 4)$.

The shaded region is defined by the inequalities $a \leq x \leq b$ and $c \leq y \leq d$.

Find the values of a , b , c and d .

$$\begin{aligned} a &= \dots -1 \dots \\ b &= \dots 5 \dots \\ c &= \dots 1 \dots \\ d &= \dots 4 \dots \quad [2] \end{aligned}$$

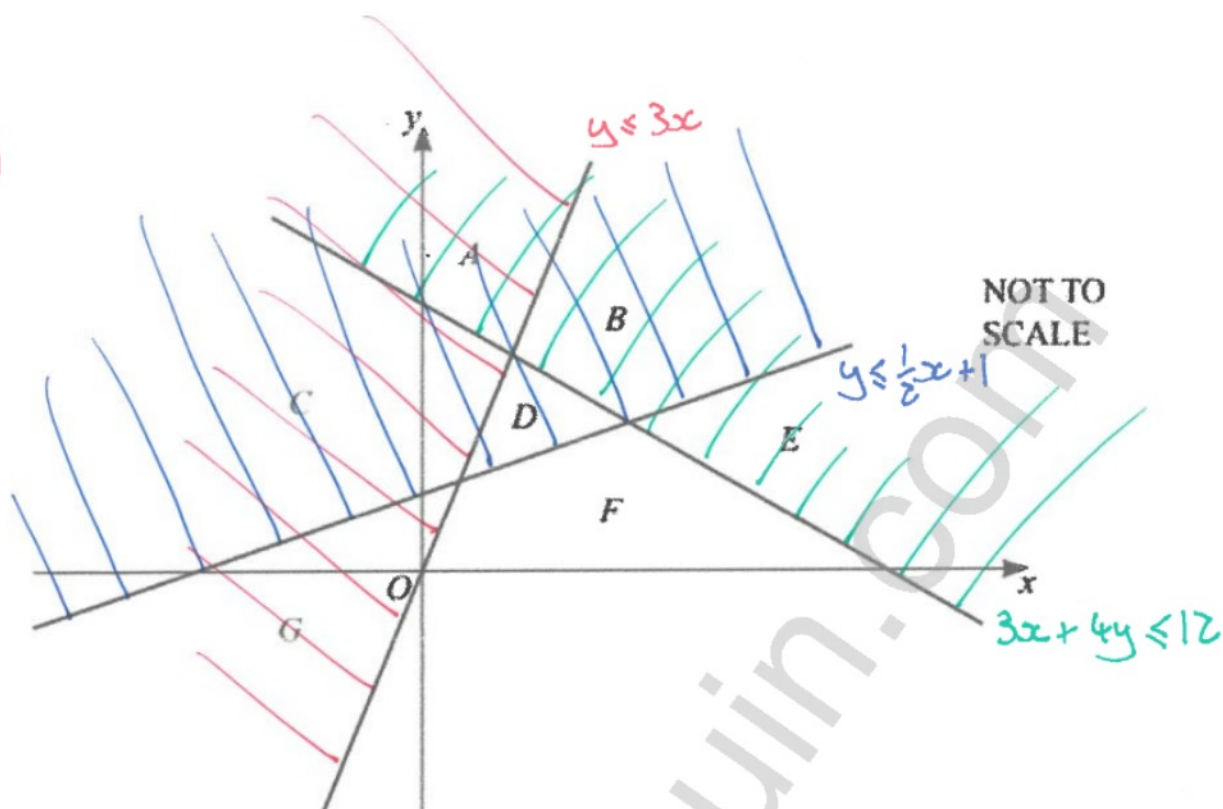


Find the inequalities that define the unshaded region, R.

$$y \geq 1, y \leq 5, x < 6, y < x$$

[4]

(9)



The diagram shows the lines $y = \frac{1}{2}x + 1$, $y = 3x$ and $3x + 4y = 12$.

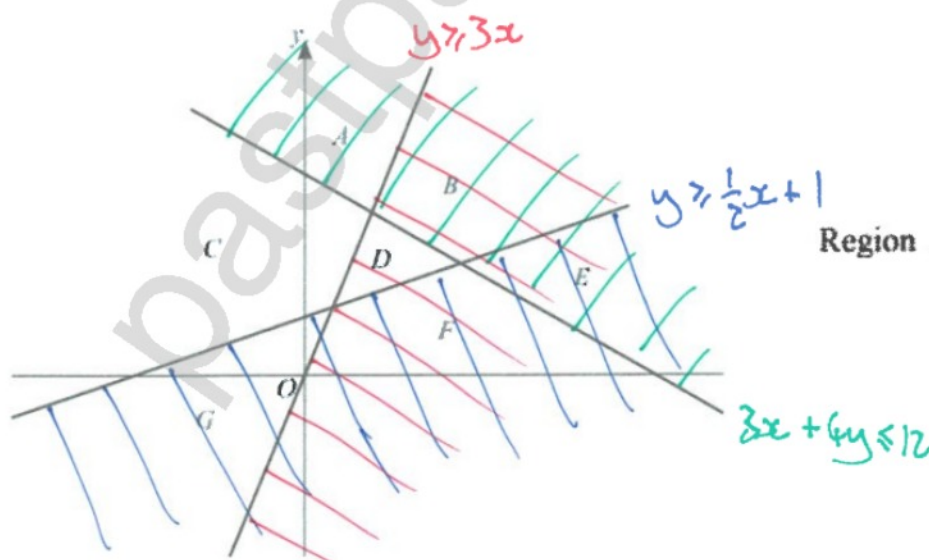
These lines divide the space into 7 regions, A, B, C, D, E, F, and G.

Write down the letter of the region which is defined by

(a) $y \leq \frac{1}{2}x + 1$, $y \leq 3x$ and $3x + 4y \leq 12$,

Region **F** [1]

(b) $y \geq \frac{1}{2}x + 1$, $y \geq 3x$ and $3x + 4y \leq 12$.



Region **C** [1]