Name:

Exam Style Questions

Graphical Inequalities

Corbettmaths

Equipment needed: Pen, Ruler, Pencil and Calculator

Guidance

1. Read each question carefully before you begin answering it.
2. Check your answers seem right.
3. Always show your workings

Video Tutorial

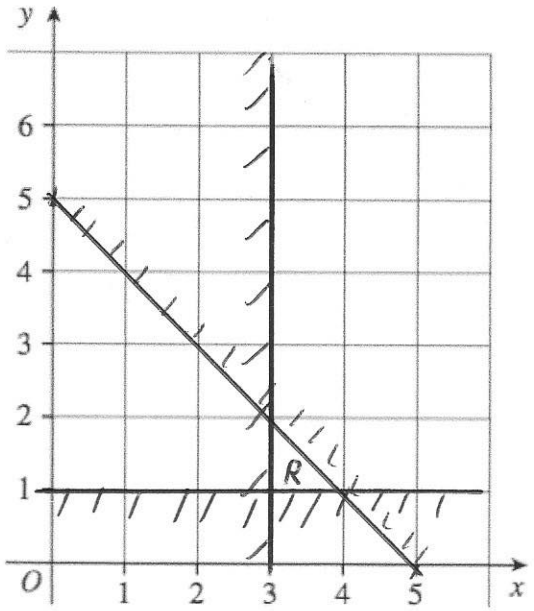
www.corbettmaths.com/contents

Videos 180, 181, 182

Answers and Video Solutions

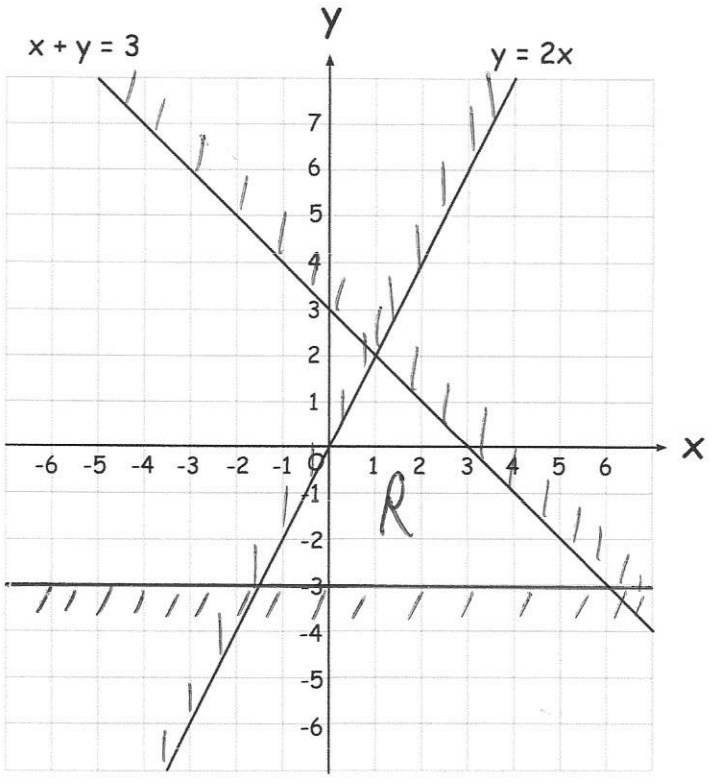
1. On the grid, clearly indicate the region that satisfies all these inequalities.

$x \geq 3$ $y \geq 1$ $x + y \leq 5$



(3)

2.



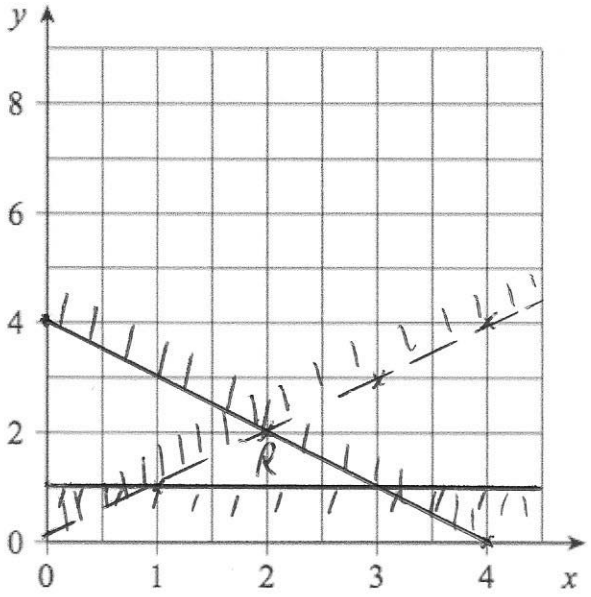
Draw another line on the grid and label the region that satisfies the inequalities

$x + y \leq 3$ $y \leq 2x$ $y \geq -3$

(2)

3. On the grid, clearly indicate the region that satisfies all these inequalities.

$y < x$ $\quad$ $y \geq 1$ $\quad$ $x + y \leq 4$



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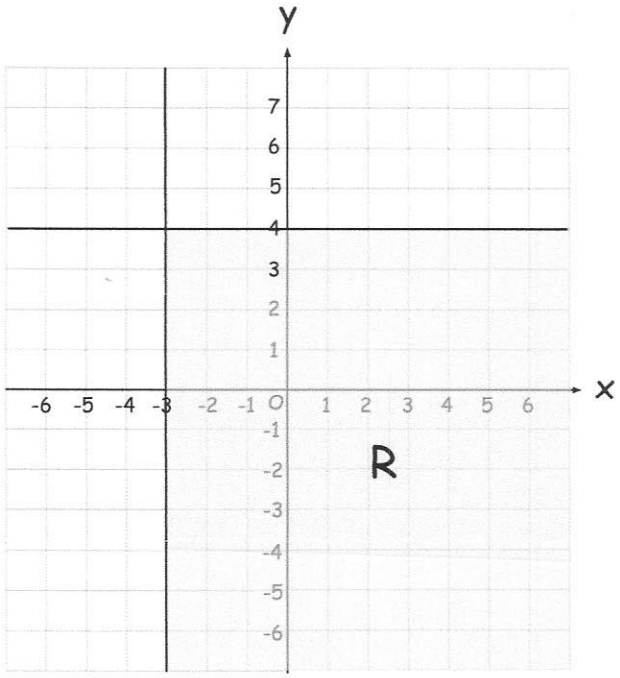
4.



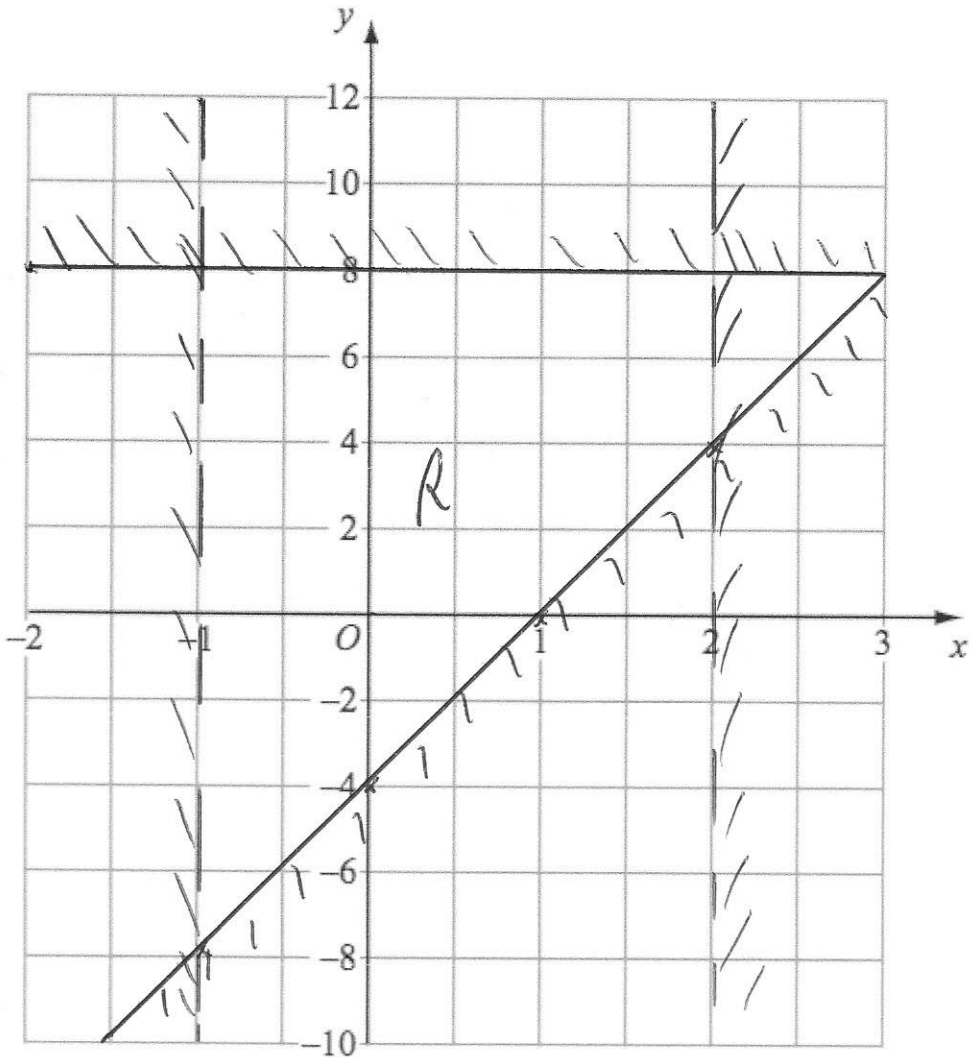
Tick the pair of inequalities that describe the shaded region.

$x \geq -3$ and $y \geq 4$ ☐ $\quad$ $x \geq -3$ and $y \leq 4$ ☑

$x \leq -3$ and $y \geq 4$ ☐ $\quad$ $x \leq -3$ and $y \leq 4$ ☐

(1)

5.



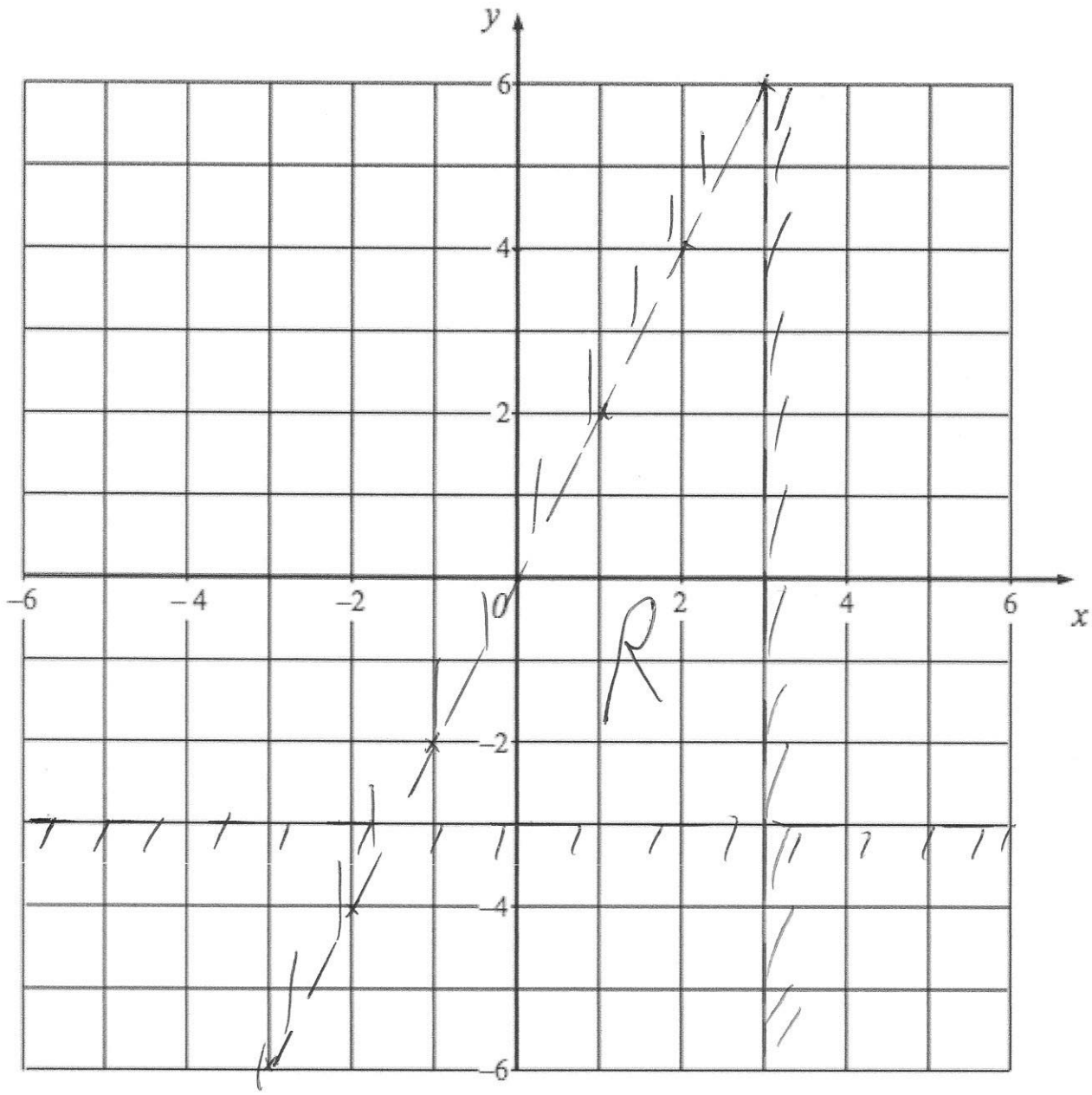
On the grid, label the region that satisfies all three of these inequalities

$-1 < x < 2$ $\quad y \leq 8$ $\quad y \geq 4x - 4$

(4)

6. On the grid, label the region that satisfies all three of these inequalities

$x < 3$ $y > -3$ $y < 2x$

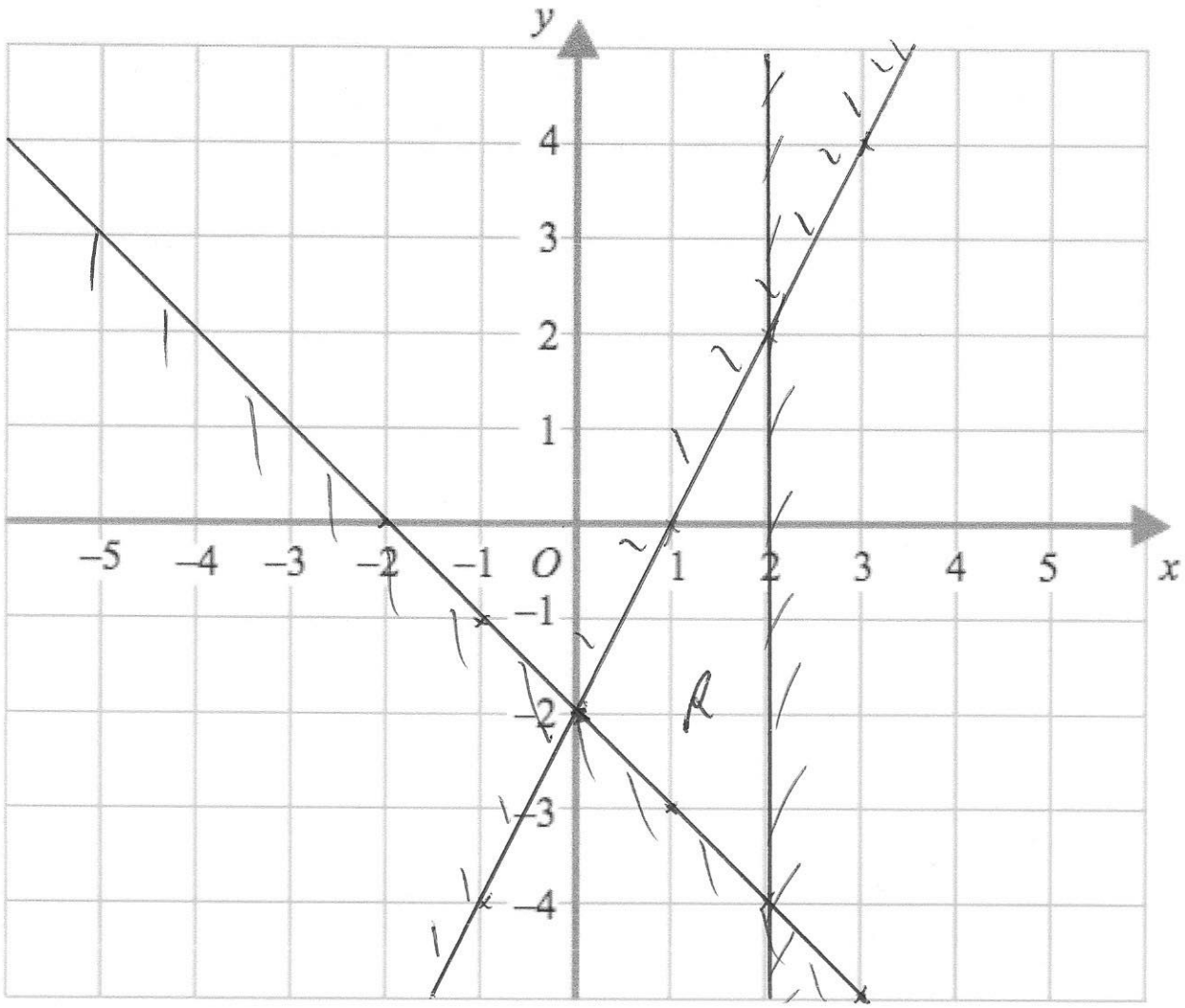


(3)

7. On the grid, clearly label the region which satisfies all three inequalities below

$x \leq 2$ $y \leq 2x - 2$ $x + y + 2 \geq 0$

$y \geq -x - 2$



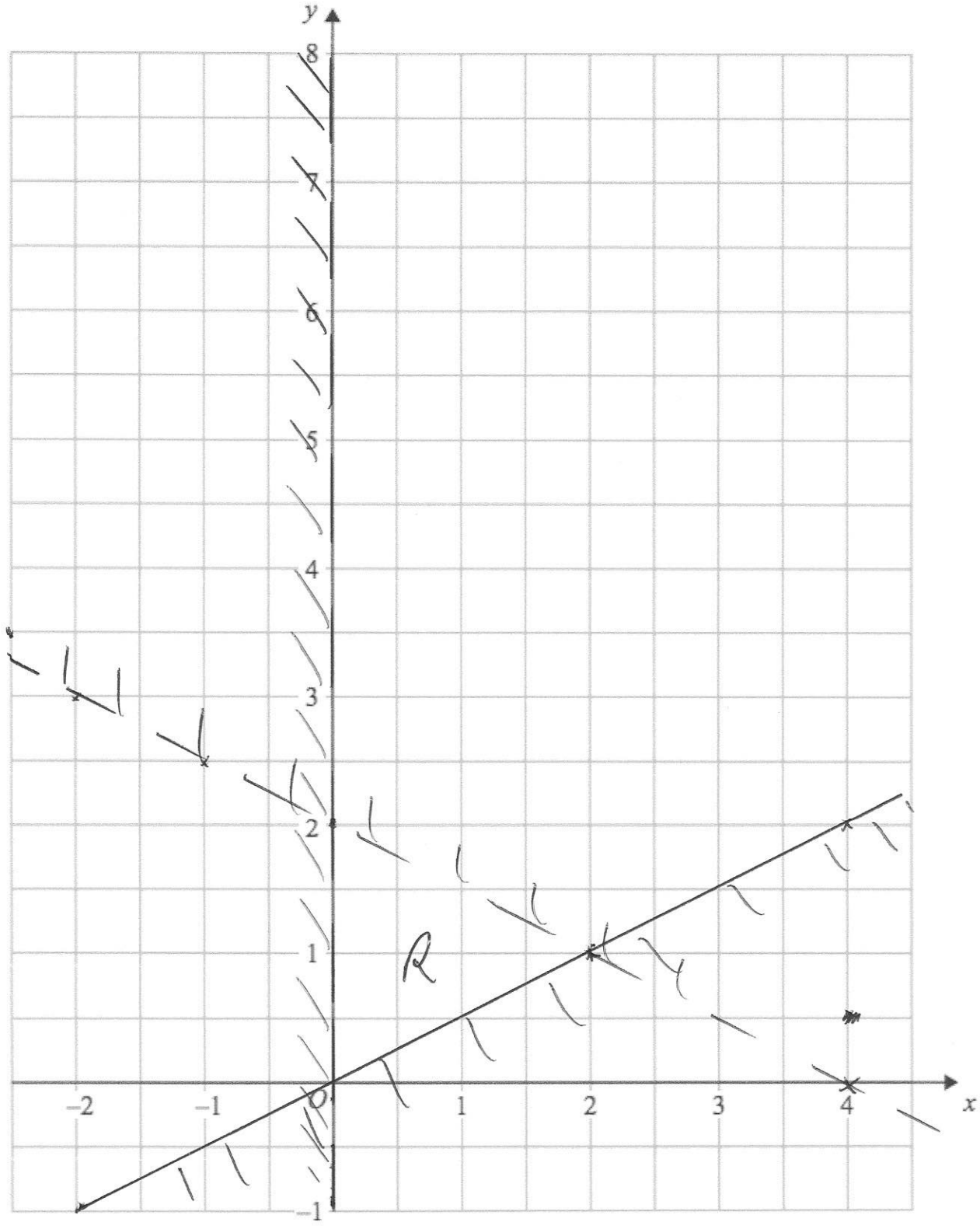
(4)

8. On the grid, clearly label the region which satisfies all three inequalities below

$x > 0$ $\quad y \geq \frac{1}{2}x$ $\quad x + 2y < 4$

$2y < -x + 4$

$y < -\frac{1}{2}x + 2$



(4)

9. A greengrocer sells bananas and apples.

In one day he sells

less than 80 bananas $x < 80$

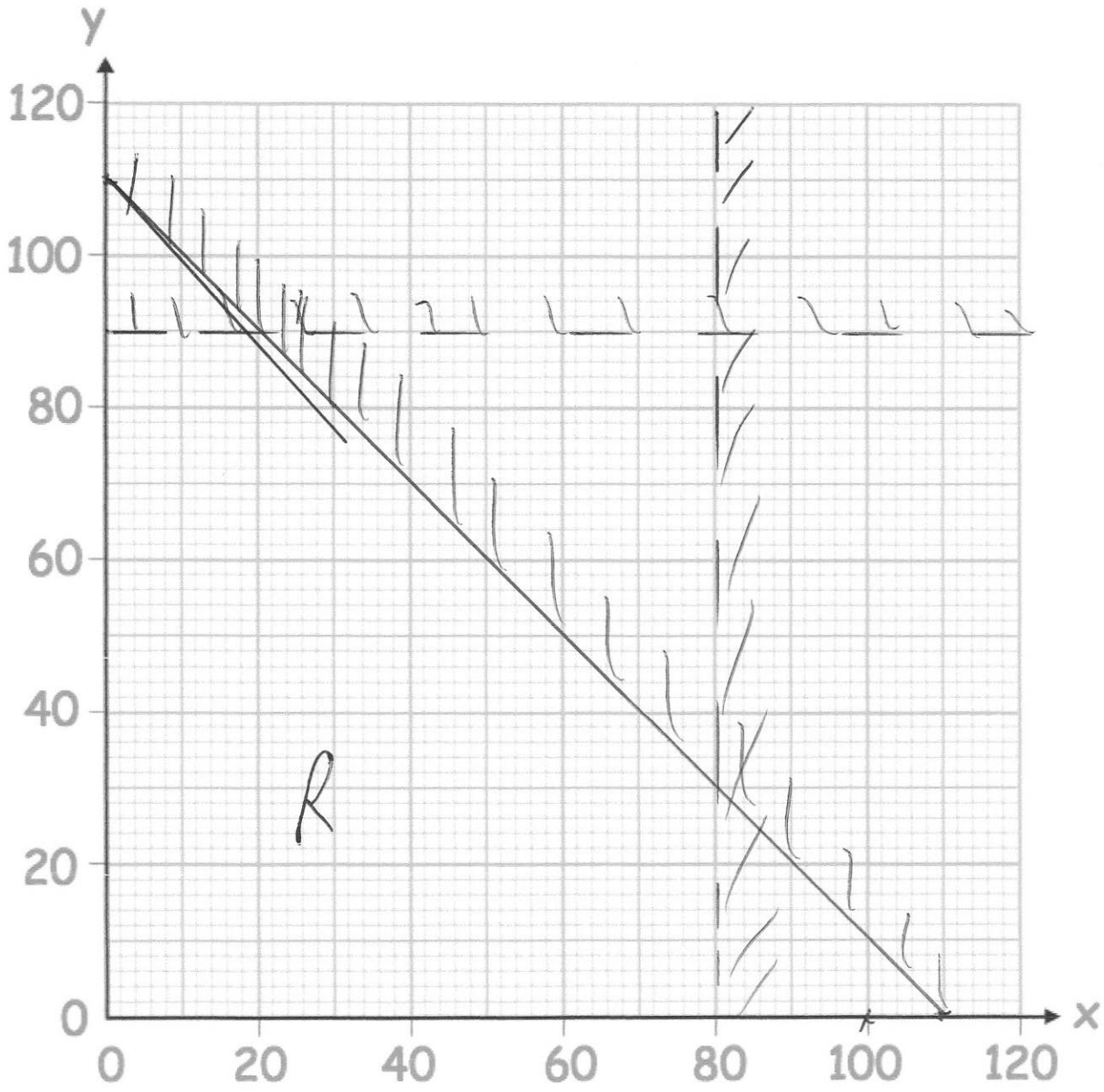
less than 90 apples $y < 90$

no more than a total of 110 pieces of fruit $x + y \leq 110$

Let x be the number of bananas sold

Let y be the number of apples sold.

Show the region below that satisfies these inequalities



(4)

10. On the grid below, shade the region that satisfies the inequalities below.

$y \geq -5$ $y \leq x$ $5x - 2y \geq 1$ $3x + 2y \leq 6$

$-2y \geq -5x + 1$

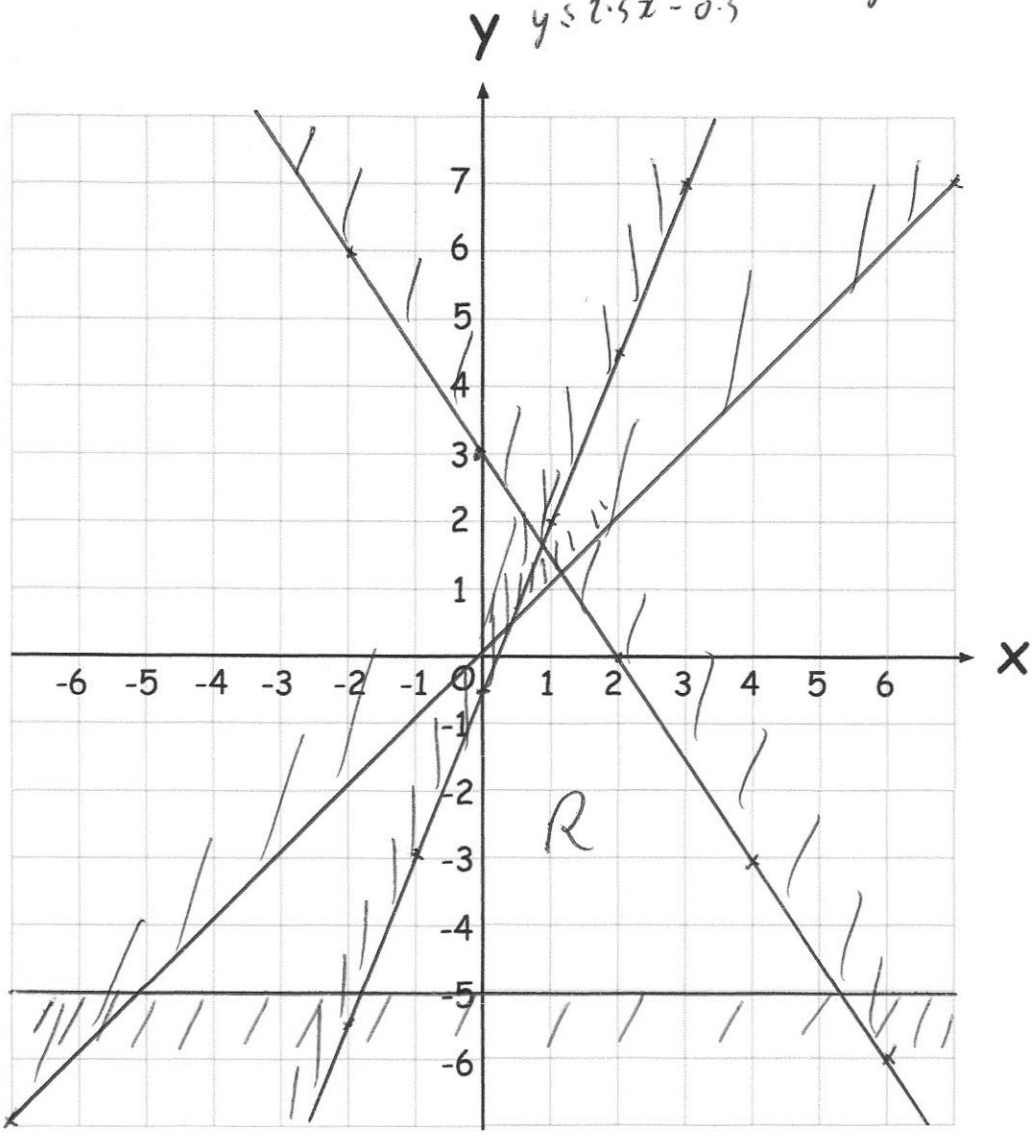
$2y \leq 5x - 1$

$y \leq 2.5x - 0.5$

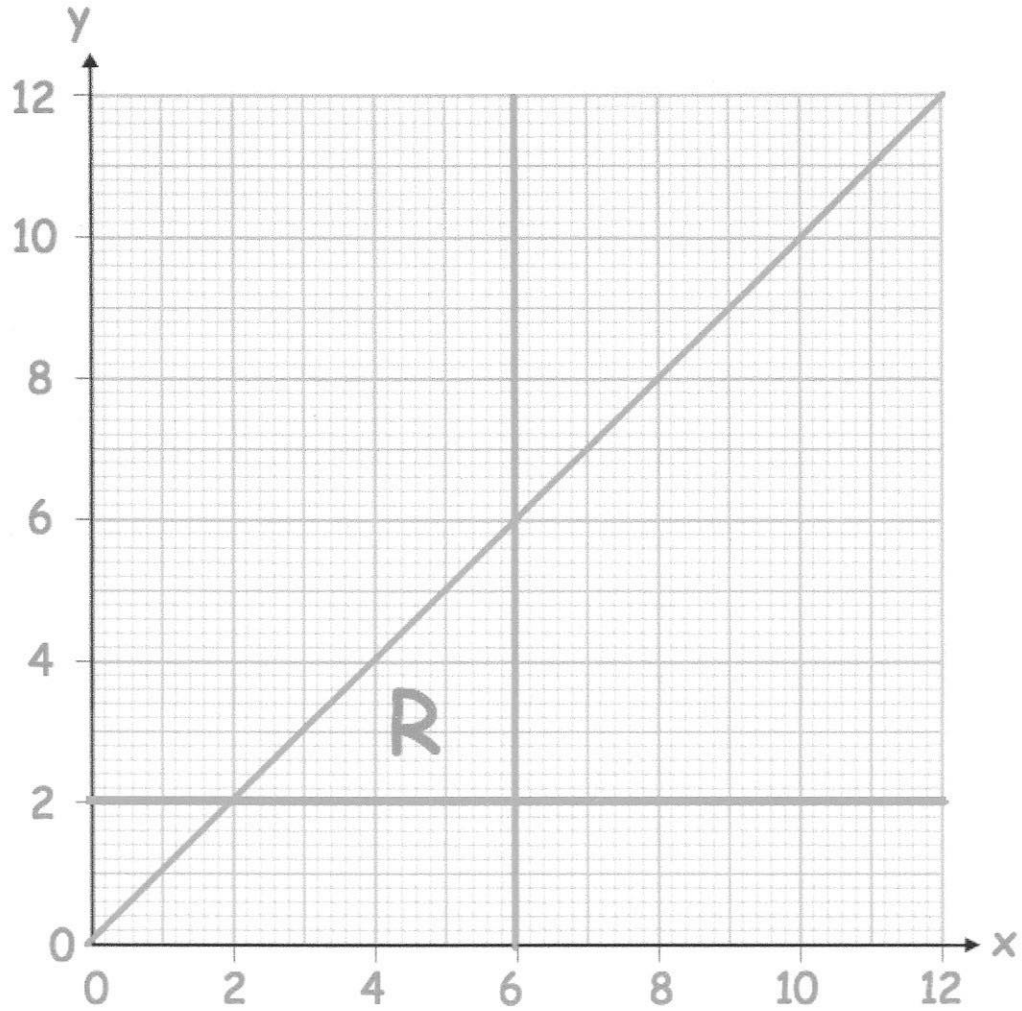
$2y \leq -3x + 6$

$y \leq -1.5x + 3$

Label the region R.



11.



The region labelled R satisfies three inequalities.

State the three inequalities

$x \leq 6$

.....

$y \geq 2$

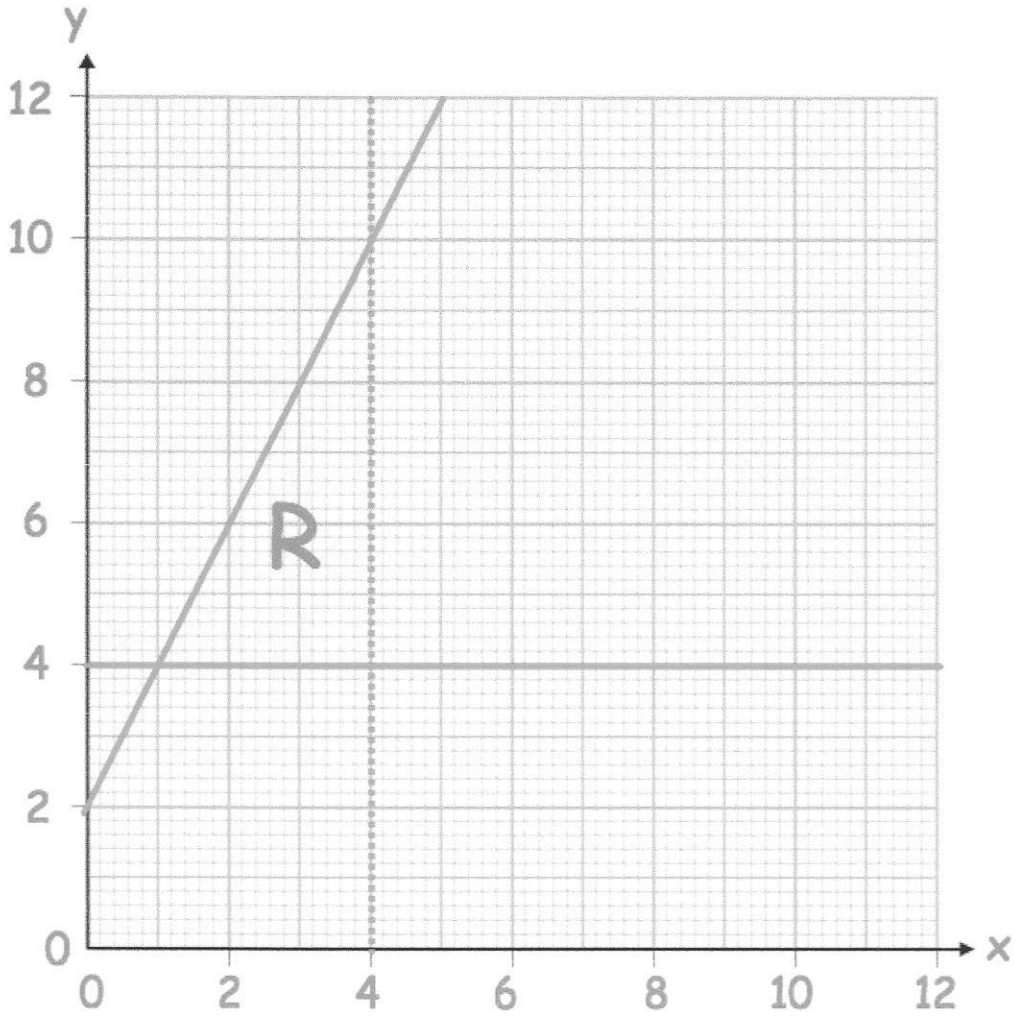
.....

$y \leq x$

.....

(3)

12.



The region labelled R satisfies three inequalities.

State the three inequalities

$x < 4$

$y \geq 4$

$y \leq 2x + 2$

$x < 4$

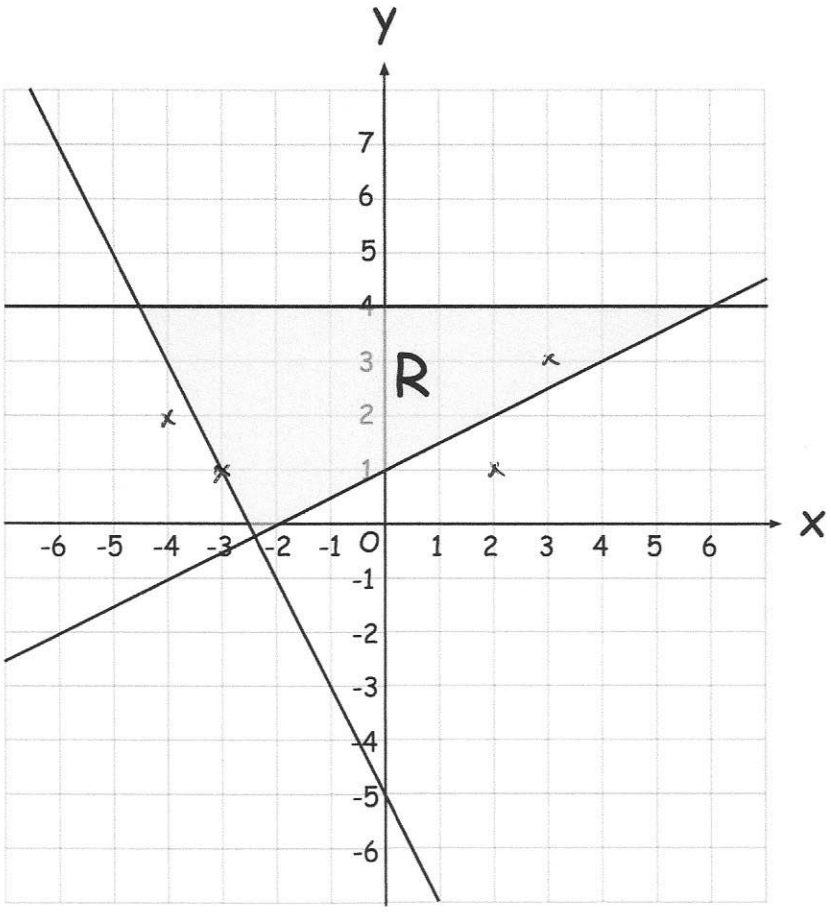
$y \geq 4$

$y \leq 2x + 2$

(3)

13. Martina has drawn the region that satisfies the 3 inequalities.

$y \leq 4$ $\quad y + 2x \geq -5$ $\quad y \geq \frac{1}{2}x + 1$



Tick whether each of the following points satisfies all 3 inequalities.

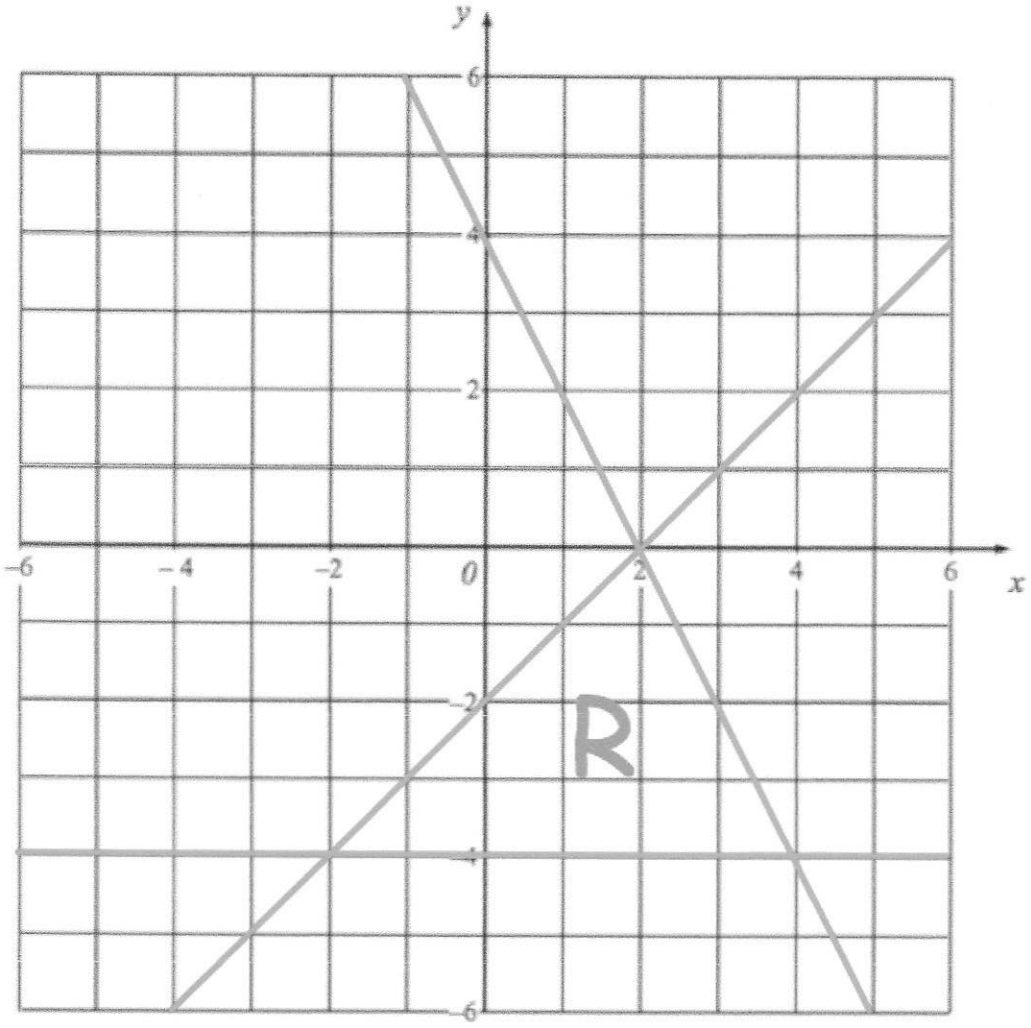
(a) $(2, 1)$ Yes ☐ No ☑ (1)

(b) $(3, 3)$ Yes ☑ No ☐ (1)

(c) $(-4, 2)$ Yes ☐ No ☑ (1)

(d) $(-3, 1)$ Yes ☑ No ☐ (1)

14.



The region labelled R satisfies three inequalities.

State the three inequalities

$y \geq -4$

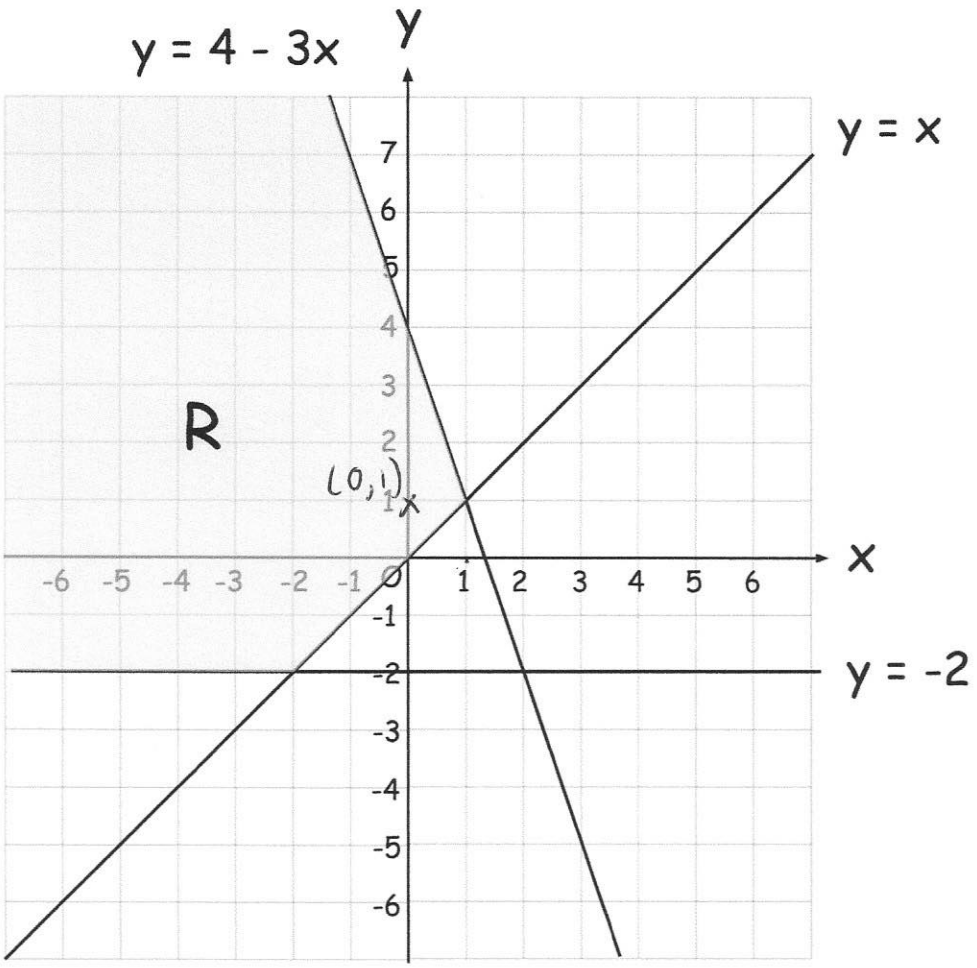
$y \leq x - 2$

$y \leq -2x + 4$

(3)

15. Sanjeev has been asked to show the region represented by

$y \geq -2$ ✓ $y \leq x$ x $y \leq 4 - 3x$



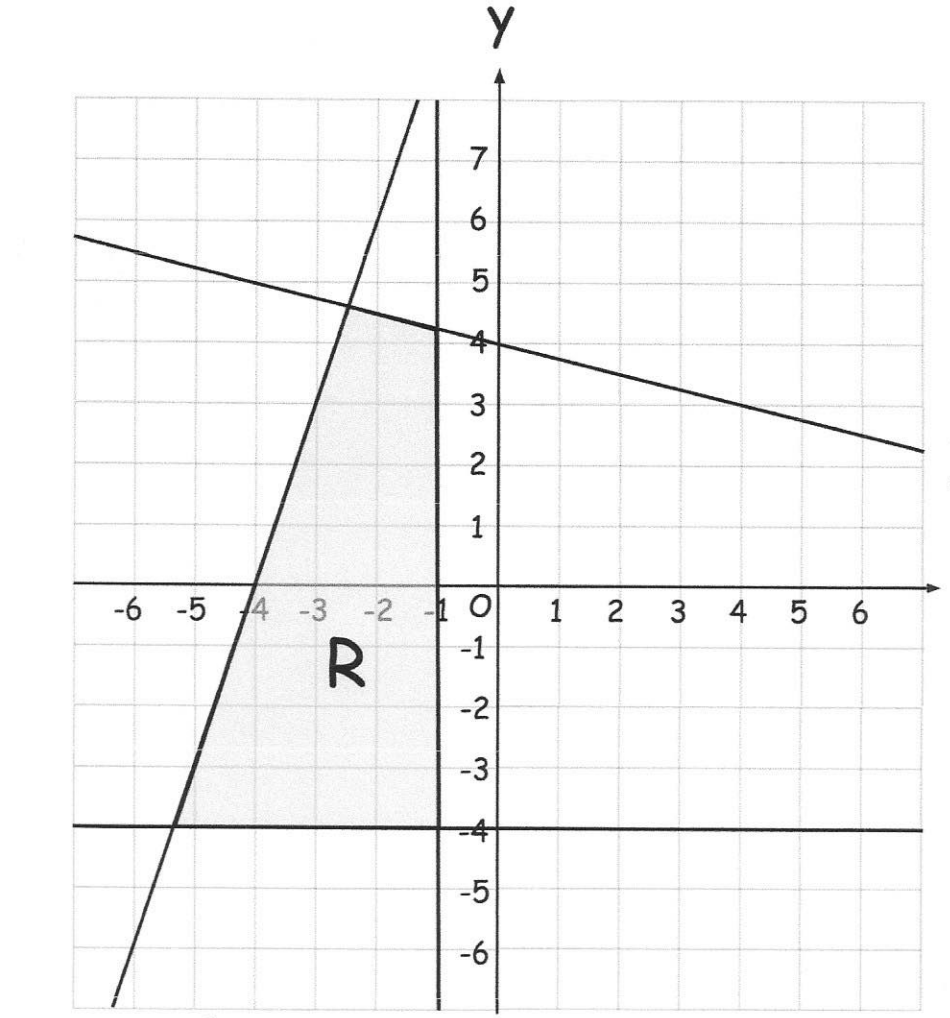
Sanjeev has made a mistake.

Explain his mistake.

For $y \leq x$, the point $(0, 1)$ would not satisfy this inequality $(1 \not\leq 0)$, so Sanjeev has accepted the wrong side of $y = x$.

(2)

16.



Write down the four inequalities that define the shaded region.

$x \leq -1$

$y \geq -4$

$y \leq 3x + 12$

$y \leq -\frac{1}{4}x + 4$

(4)