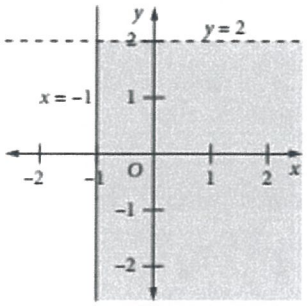
SIMULTANEOUS LINEAR INEQUALITIES

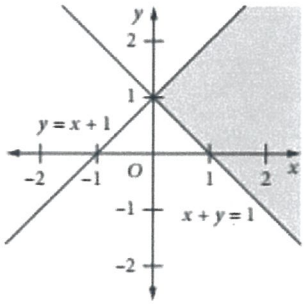
1 Describe the shaded region in each diagram using both words and inequalities.

(a)



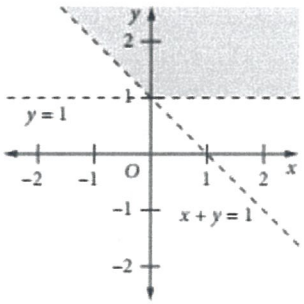
$x \geqslant -1$ and $y < 2$

(b)



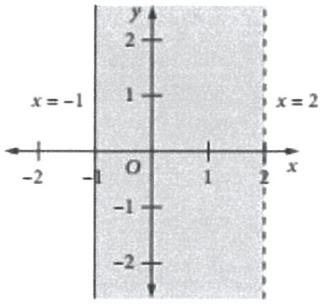
$y \leqslant x + 1$ and $y \geqslant 1 - x$

(c)



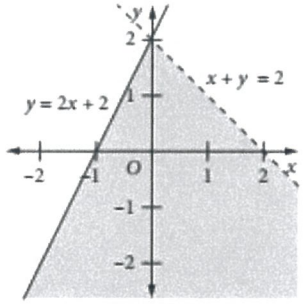
$y > 1$ and $y > 1 - x$

(d)



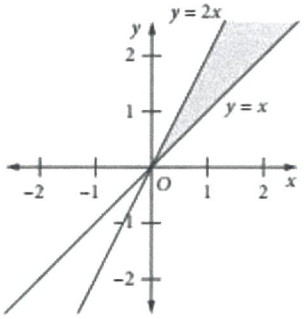
$-1 \leqslant x < 2$

(e)



$y \leqslant 2x + 2$ and $y < 2 - x$

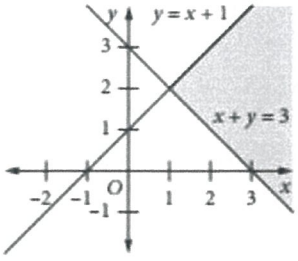
(f)



$y \geqslant x$ and $y \leqslant 2x$

2 Which of the following points is in the shaded region?

A $(1,3)$ ✗ B $(1,1)$ ✗
C $(3,1)$ ✓ D $(-1,3)$ ✗



3 What are the inequalities that define the region graphed in question 2?

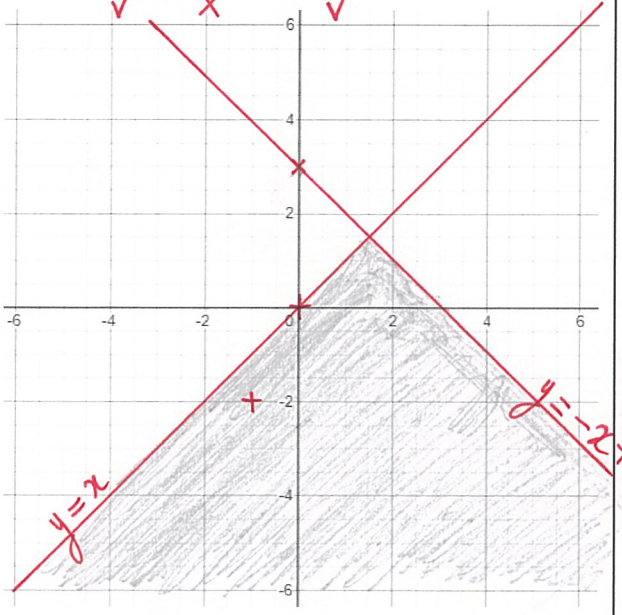
$y \leqslant x + 1$ and $y \geqslant 3 - x$

SIMULTANEOUS LINEAR INEQUALITIES

4 Graph the regions defined by each set of inequalities. State whether each of the given points is in the region.

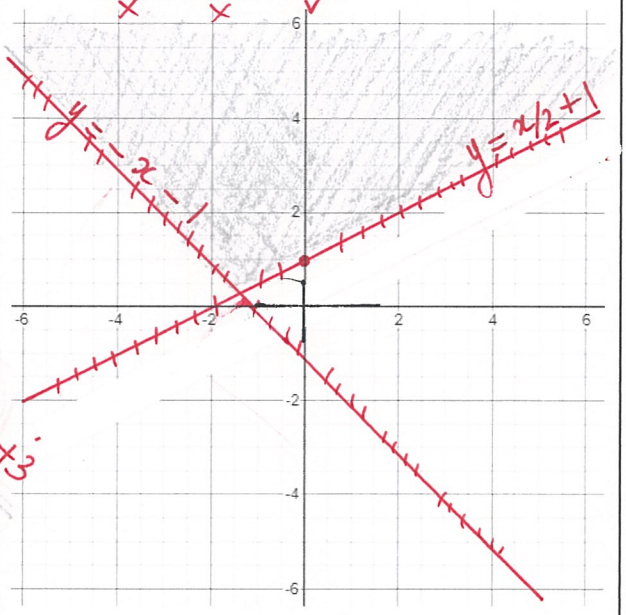
(a) $x + y \leq 3, y \leq x$

$(0,0), (2,3), (-1,-2)$ ✓ ✗ ✓



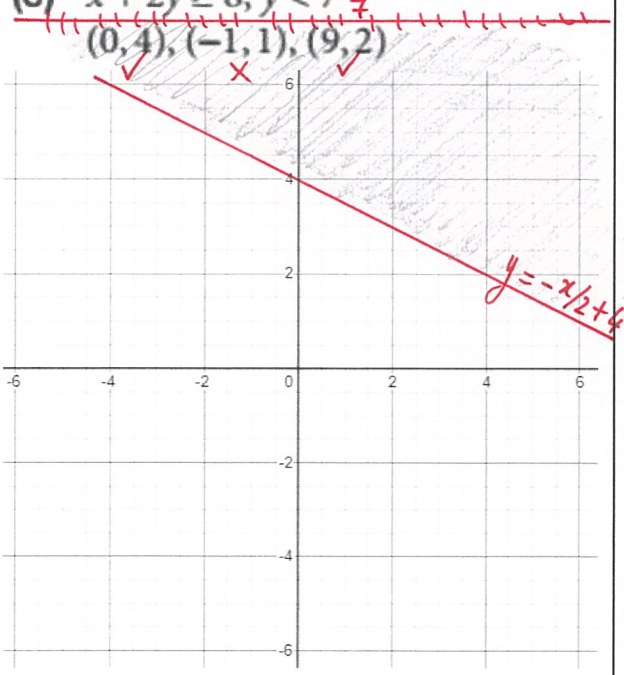
(b) $2y > x + 2, x + y > -1$

$(0,0), (0,1), (2,5)$ ✗ ✗ ✓



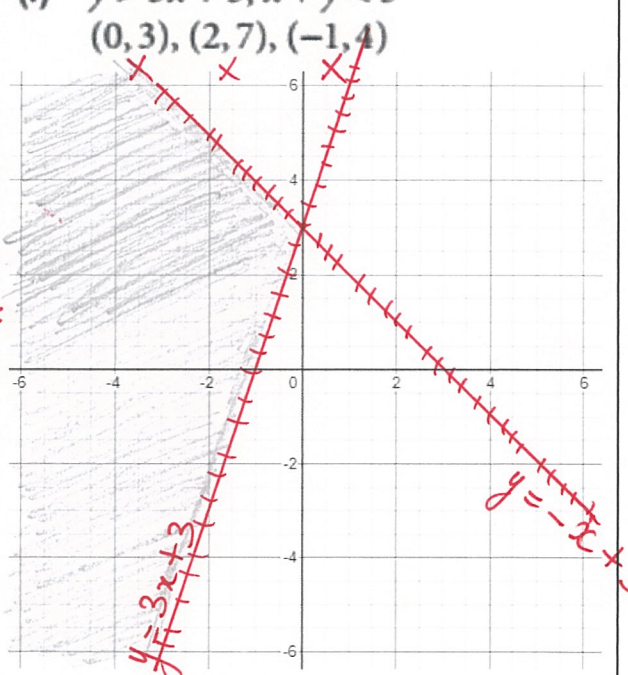
(c) $x + 2y \geq 8, y < 7$

$(0,4), (-1,1), (9,2)$ ✓ ✗ ✓



(f) $y > 3x + 3, x + y < 3$

$(0,3), (2,7), (-1,4)$ ✗ ✗ ✗



$y = \frac{-x}{2} + 4$