CHAPTER 6

LINEAR INEQUALITIES

DECEMBER 2020

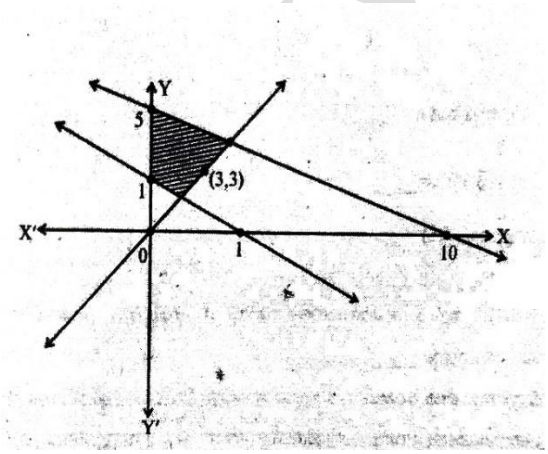
1. i. Which of the following is the solution of the inequality $4x + 3 < 5x + 7$? (1)
   a. $(-\infty, -4]$ b. $(-\infty, 4)$
   c. $[-4, \infty)$ d. $(-4, \infty)$
   ii. Solve the following inequalities graphically:
   $x + y \leq 4, 2x - y \leq 0, x \geq 0, y \geq 0$ (3)

MARCH 2020

2. Solve graphically the system of inequation:
   $2x + y \geq 4; x + y \leq 3;\ 2x - 3y \leq 6;$
   $x \geq 0; y \geq 0$ (4)

IMPROVEMENT 2019

3. To receive A grade in a course, one must obtain an average of 90 marks or more in five examinations. Sunita's marks in first 4 examinations are 87, 92, 94 and 95, find minimum marks that Sunita must obtain in fifth examination to get grade 'A' in the course. (3)
4. Shaded region in the graph shows solution of a system of linear inequalities. Find the inequalities. (4)



MARCH 2019

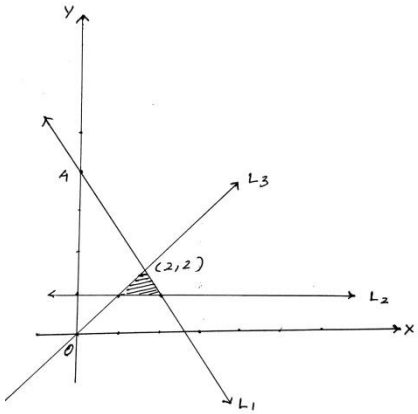
5. a) Solve $\frac{3(x-2)}{5} \leq \frac{5(2-x)}{3}$ (2)
   b) Solve the inequalities
   $2x + 3y \leq 12; x \geq 1; y \geq 2$
   graphically. (4)

IMPROVEMENT 2018

6. Solve the inequality:
   $\frac{x}{2} \geq \frac{5x-2}{3} - \frac{7x-3}{5}$ 3
7. Solve the system of inequalities graphically:
   $2x + y \geq 4, x + y \leq 3$ and $2x - 3y \leq 6$. 4

MARCH 2018

8. a) Solve the inequality:
   $\frac{2x-1}{3} \geq \frac{3x-2}{4} - \frac{2-x}{5}$ (3)
   b) Represent the solution on a number line. (1)
9. The graphical solution of a system of linear inequalities is shown in the figure.



   a) Find the equation of the lines L_1, L_2, L_3. (4)
   b) Find the inequalities representing the solution region. (2)

IMPROVEMENT 2017

10. a) Solve $4x + 3 < 5x + 7$ (1)
    b) Solve graphically the system of inequations:
    $x + 2y \leq 8; 2x + y \leq 8; x \geq 0; y \geq 0$ (4)

MARCH 2017

11. a) Solve the inequality: $\frac{x}{3} > \frac{x}{2} + 1$. (2)

b) Solve the system of inequalities graphically:
$2x + y > 6$
$3x + 4y \leq 12$ (3)

IMPROVEMENT 2016

12. a) Which among the following inequality represents the interval $[2, \infty)$ (1)
i) $x - 3 \geq 5, x \in R$
ii) $3x - 3 \geq 5, x \in R$
iii) $3x - 1 \geq 3, x \in R$
iv) $3x - 1 \geq 5, x \in R$

b) Solve the following inequalities graphically.
$3x + 2y \leq 12; x \geq 1; y \geq 2$ (3)

MARCH 2016

13. a) Which among the following is the interval corresponding to the inequality $-2 < x \leq 3$?
i) $[-2,3]$ ii) $[-2, 3)$
iii) $(-2, 3]$ iv) $(-2,3)$ (1)

b) Solve the following inequalities graphically:
$2x + y \geq 4; x + y \leq 3; 2x - 3y \leq 6$ (3)

IMPROVEMENT 2015

14. a) Solve $7x + 3 < 5x + 9$ and represent the solution on the number line. (M 2014)

b) Solve $3x + 4y \leq 60; x + 3y \leq 30; x, y \geq 0$, graphically. (3)

MARCH 2015

15. a) The interval representing the solution of the inequality $3x - 1 \geq 5, x \in R$is …… (1)

b) Solve the following system of inequalities graphically: (3)
$x + 2y \leq 8; 2x + y \leq 8; x \geq 0; y \geq 0$

IMPROVEMENT 2014

16. a) Represent the inequality $x > -3$ on a number line. (1)

b) Solve the following inequalities graphically: $x + y \geq 5; x - y \leq 3$ (3)

MARCH 2014

17. a) Solve $7x + 3 < 5x + 9$ and represent the solution on the number line (2)

b) Solve the following system of inequalities graphically:
$x + 2y \leq 8; 2x + y \leq 8; x \geq 0, y \geq 0$ (3)

IMPROVEMENT 2013

18. a) Raju obtained 70 and 60 marks in first two examinations. Find the minimum marks he should get in the third examination to have an average of atleast 50 marks. (2)

b) Solve the following system of inequalities graphically. $3x + 2y \leq 12, x \geq 1, y \geq 2$. (3)

MARCH 2013

19. a) Solve: 4x+3<3x+7. Represent the solution on the real line. (2)

b) Solve the following system of inequalities graphically. $3x + 2y \leq 12; x \geq 0; y \geq 0$ (3)

IMPROVEMENT 2012

20. i) Solve $4x - 5y < 7$, when x is a real number. (2)

ii) Solve the following system of inequalities graphically $3x + 4y \leq 12; x \geq 0; y \geq 0$. (3)

MARCH 2012

21. a) Solve the inequality $3(2-x) \geq 2(1-x)$

b) Solve the following system of inequalities graphically.

$2x + y \geq 4, x + y \leq 3, 2x - 3y \leq 6$ (3)

IMPROVEMENT 2011

22. a) Solve the inequality: $1 \leq \frac{2x+3}{5} \leq 4$ (2)

b) Solve graphically the inequalities: (3)

$x \geq 0, y \geq 0, 5x + y \geq 5, x + 3y \geq 5$

MARCH 2011

23. i) Solve the inequality:

$2(2x + 3) - 10 < 6(x - 2)$ (2)

ii) Solve the following system of inequalities graphically.

$x - 2y \leq 3; 3x + 4y \geq 12; x \geq 0, y \geq 0$ (3)

IMPROVEMENT 2010

24. a) Arathi took 3 examinations in a year. The marks obtained by her in the second and third examinations are more than 5 and 10 respectively than in the first examination. If her average mark is at least 80 find the minimum mark that she should get in the first examination? (2)

b) Solve the following system of inequalities graphically: (4)

$2x + y \geq 6$

$3x + 4y \leq 12$

MARCH 2010

25. i) Solve the inequality: $3(x-1) \leq 2(x-3)$ (2)

ii) Solve the following system of inequalities graphically: $5x + 4y \leq 20; x \geq 1; y \geq 2$ (3)

IMPROVEMENT 2009

26. i) Solve the inequality: $\frac{3x-4}{2} \geq \frac{x+1}{4} - 1.$ (2)

ii) Solve the following system of linear inequalities graphically:

$x + 2y \leq 8; 2x + y \leq 8; x \geq 0; y \geq 0.$ (3)

MARCH 2009

27. a) Solve the inequality:

$2(2x + 3) - 10 < 6(x - 2)$ when x is a real number. (2)

b) Solve the following inequalities graphically: $2x + y \leq 24; x + y \leq 11;$

$2x + 5y \leq 40; x \geq 0; y \geq 0.$ (3)

Never give up on what you really want to do. The person with big dreams is more powerful than one with all the facts

Albert Einstein