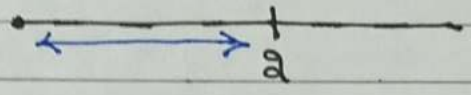
Linear Inequalities

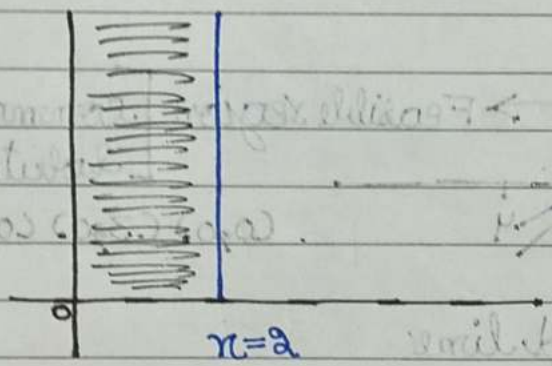
$\Rightarrow 3x < 2$
$\Rightarrow 3x > 2$

$\Rightarrow 3x - 2 \leq 5$
$\Rightarrow 3x + 2 \geq 5$

eg:- x = Rs 25 y = Rs 10 Rs 100
2 3 $2x + 3y \leq 100$
$50 + 30$

eg:- $3x \leq 6$
$x \leq 2$

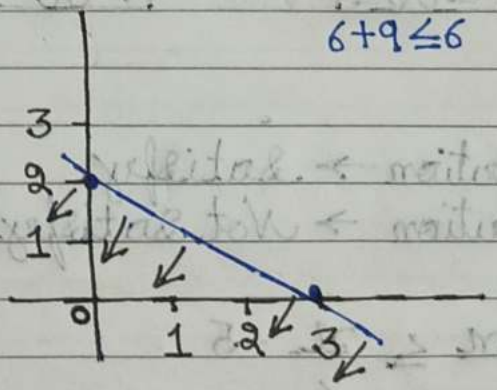




$x \leq 2$
$x = a$

eg:- $2x + 3y \leq 6$
$2x + 3y = 6$
$x = 0 \quad y = 2$
$y = 0 \quad x = 3$

$6 + 9 \leq 6$



Step 1:- change inequality into equality.
Step 2:- Find out any Two Points
$x = 0 \quad y = ? \; , \; y = 0 \quad x = ?$
Step 3:- Plot these points on co-ordinate axis.
Step 4:- Any Point Put in given inequality.

Date .....

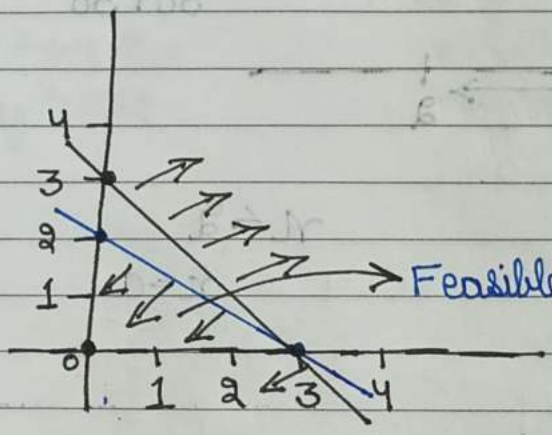
Note:- line ka Point nahi hona chaiya.
[0,0]

eg:- $2x + 3y \leq 6$ $\quad x+y \geq 3$ $\quad x \geq 0$ $y \geq 0$

$2x+3y=6$ $\quad x+y=3$

$x=0$ $y=2$ $(0,2)(3,0)$ $\quad x=0$ $y=3$ $(0,3)$ $(3,0)$

$y=0$ $x=3$ $\quad y=0$ $x=3$



Feasible region [common Portion / Solution space]

$(0,0)$ $(3,0)$ $(0,2)$

Step 1:- Park line or Patted line

$\geq$ or $\leq$ $\quad$ $>$ or $<$

Step 2:-

Solution → Satisfy.
Not solution → Not satisfy.

eg:- $\frac{5-2x}{3} \leq \frac{x}{6} - 5$

$5 < 6 = +6 < +5 = 6 > 5$

$-5 > -6$

-Ve multiply or Divide sign change

$= 10 - 4x \leq x - 30$

$-10 + 30 \leq x + 4x$

$\frac{40}{5} \leq x$

$8 \leq x$ $\quad (x \geq 8)$

eg:- $\left|x+\frac{1}{4}\right| > \frac{7}{4}$

$|x| > \pm(x)$

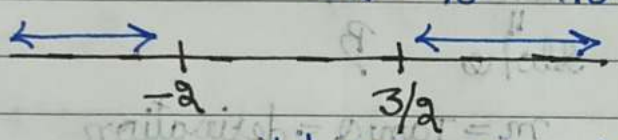
$y = |x| \to y = \pm x \;/\; \pm y = x$

$x+\frac{1}{4} > \frac{7}{4}$ $\quad -\left(x+\frac{1}{4}\right) > \frac{7}{4}$

$x > \frac{7}{4} - \frac{1}{4}$ $\quad -x - \frac{1}{4} > \frac{7}{4}$

$x > \frac{3}{2}$ $\quad -\frac{1}{4} - \frac{7}{4} > x$

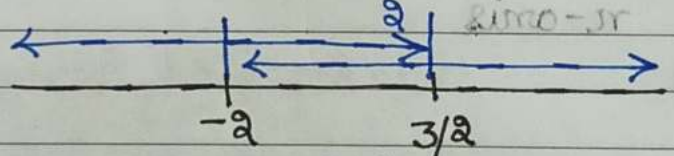
$-2 > x \quad x < -2$



Not common All Soln.

$(-\infty, -2) \cup (3/2, \infty)$

$\Rightarrow x > -2 \quad x < 3$



11 common Portion; only common Portion solution

$-2 < x < 3/2$