Linear Inequations Ex 15.6 Q1(i)

We have,

$2x + 3y \le 6, \quad 3x + 2y \le 6, \quad x \ge 0, y \ge 0$

Converting the given inequation into equations, the inequations reduce to $2x + 3y = 6$,

$3x + 2y = 6, \quad x = 0$ and $y = 0$.

Region represented by $2x + 3y \le 6$:

Putting $x = 0$ inequation $2x + 3y = 6$

we get $y = \frac{6}{3} = 2$.

Putting $y = 0$ in the equation $2x + 3y = 6$,

we get $x = \frac{6}{3} = 3$.

$\therefore$ This line $2x + 3y = 6$ meets the coordinate axes at $(0,2)$ and $(3,0)$. Draw a thick line joining these points. we find that $(0,0)$ satisfies inequation $2x + 3y \le 6$.

Region represented by $3x + 2y \le 6$:

Putting $x = 0$ in the equation

$3x + 2y = 6$, we get $y = \frac{6}{2} = 3$.

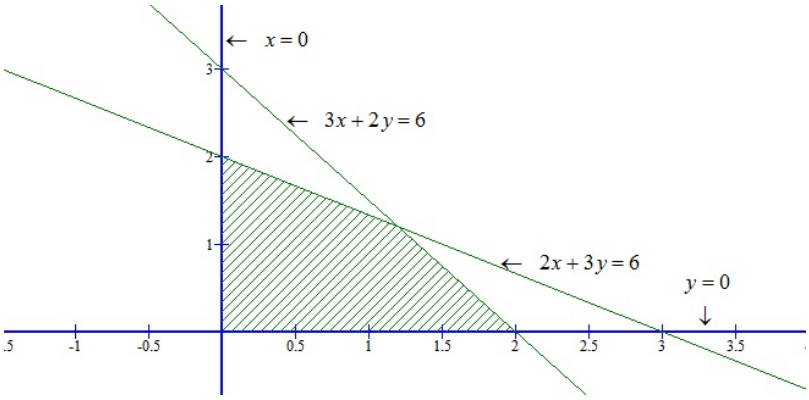
Putting $y = 0$ in the equation

$3x + 2y = 6$, we get $x = \frac{6}{2} = 2$.

$\therefore$ This line $3x + 2y = 6$ meets the coordinate axes at $(0,3)$ and $(2,0)$. Draw a thick line joining these points. we find that $(0,0)$ satisfies inequation $3x + 2y \le 6$.

Region represented by $x \ge 0$ and $y \ge 0$:

Clearly $x \ge 0$ and $y \ge 0$ represent the first quadrant.



Linear Inequations Ex 15.6 Q1(ii)

We have,

$2x + 3y \le 6, \quad x + 4y \le 4, \quad x \ge 0, y \ge 0$

Converting the inequations into equations, the inequations reduce to $2x + 3y = 6$,

$x + 4y = 4, \quad x = 0$ and $y = 0$.

Region represented by $2x + 3y \le 6$:

Putting $x = 0$ in $2x + 3y = 6$,

we get $y = \frac{6}{3} = 2$

Putting $y = 0$ in $2x + 3y = 6$,

we get $x = \frac{6}{2} = 3$.

$\therefore$ The line $2x + 3y = 6$ meets the coordinate axes at $(0,2)$ and $(3,0)$. Draw a thick line joining these points.

Now, putting $x = 0$ and $y = 0$ in $2x + 3y \le 6 \quad \Rightarrow 0 \le 6$

Clearly, we find that $(0,0)$ satisfies inequation $2x + 3y \le 6$

Region represented by $x + 4y \le 4$

Putting $x = 0$ in $x + 4y = 4$

we get, $y = \frac{4}{4} = 1$

Putting $y = 0$ in $x + 4y = 4$,

we get $x = 4$

$\therefore$ The line $x + 4y = 4$ meets the coordinate axes at $(0,1)$ and $(4,0)$. Draw a thick line joining these points.

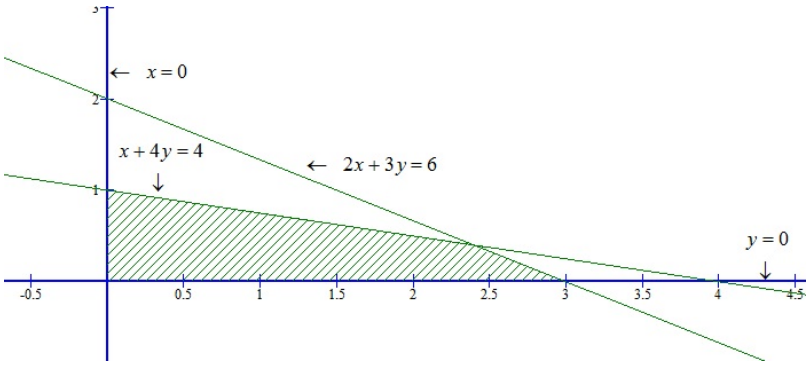
Now, putting $x = 0, \ y = 0$

in $x + 4y \le 4$, we get $0 \le 4$

Clearly, we find that $(0,0)$ satisfies inequation $x + 4y \le 4$.

Region represented by $x \ge 0$ and $y \ge 0$:

Clearly $x \ge 0$ and $y \ge 0$ represent the first quadrant.



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