

RD Sharma
Solutions
Class 11 Maths
Chapter 15
Ex 15.5

Linear Inequations Ex 15.5 Q1

We have,

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

$$\Rightarrow x + y \leq 0$$

Converting the given inequation into equation we obtain, $x + y = 0$.

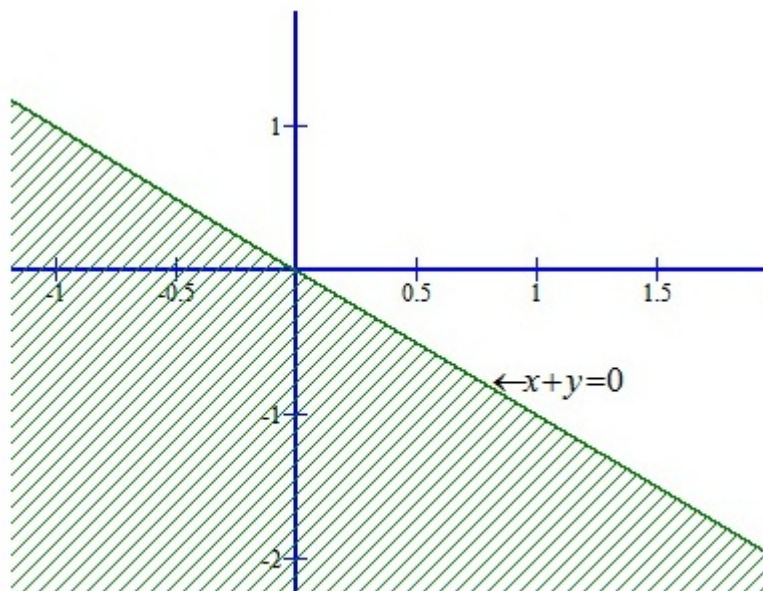
Putting $y = 0$, we get $x = 0$

Putting $x = 0$, we get $y = 0$

Putting $x = 3$, we get $y = -3$.

We plot these points and join them by a thick line. This line divides the xy -plane in two parts. To determine the region represented by the given inequality consider the inequality.

So, the region containing the origin is represented by the given inequation as show below:



This region represents the solution set of the given inequations.

Linear Inequations Ex 15.5 Q2

We have,

$$x + 2y \geq 6$$

Converting the inequation into equation, we obtain, $x + 2y = 6$.

Putting $y = 0$, we get $x = 6$

Putting $x = 0$, we get $2y = 6 \Rightarrow y = 3$

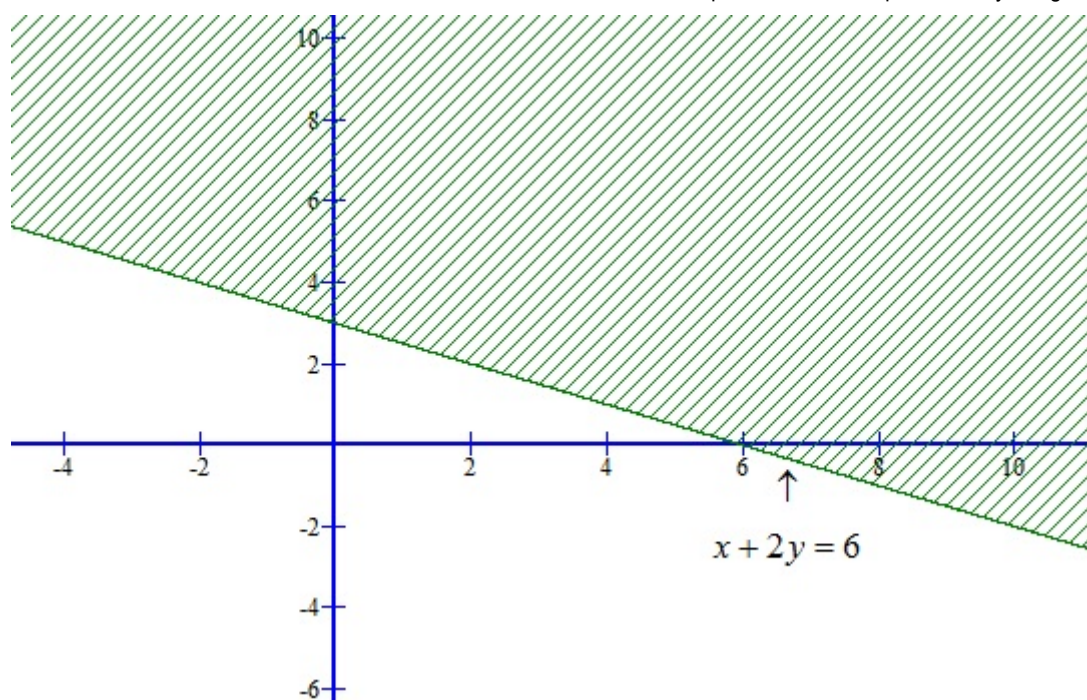
We plot these points and join them by a thick line. This line divides the xy -plane in two parts. To determine the region represented by the given inequality consider the point $0(0,0)$.

Putting $x = 0$ and $y = 0$ in (i) we get, $0 \geq 6$

It is not possible.

Clearly, $0(0,0)$ does not satisfies the inequality.

So, the region represented by the given inequation is the shaded region shown below:



Linear Inequations Ex 15.5 Q3

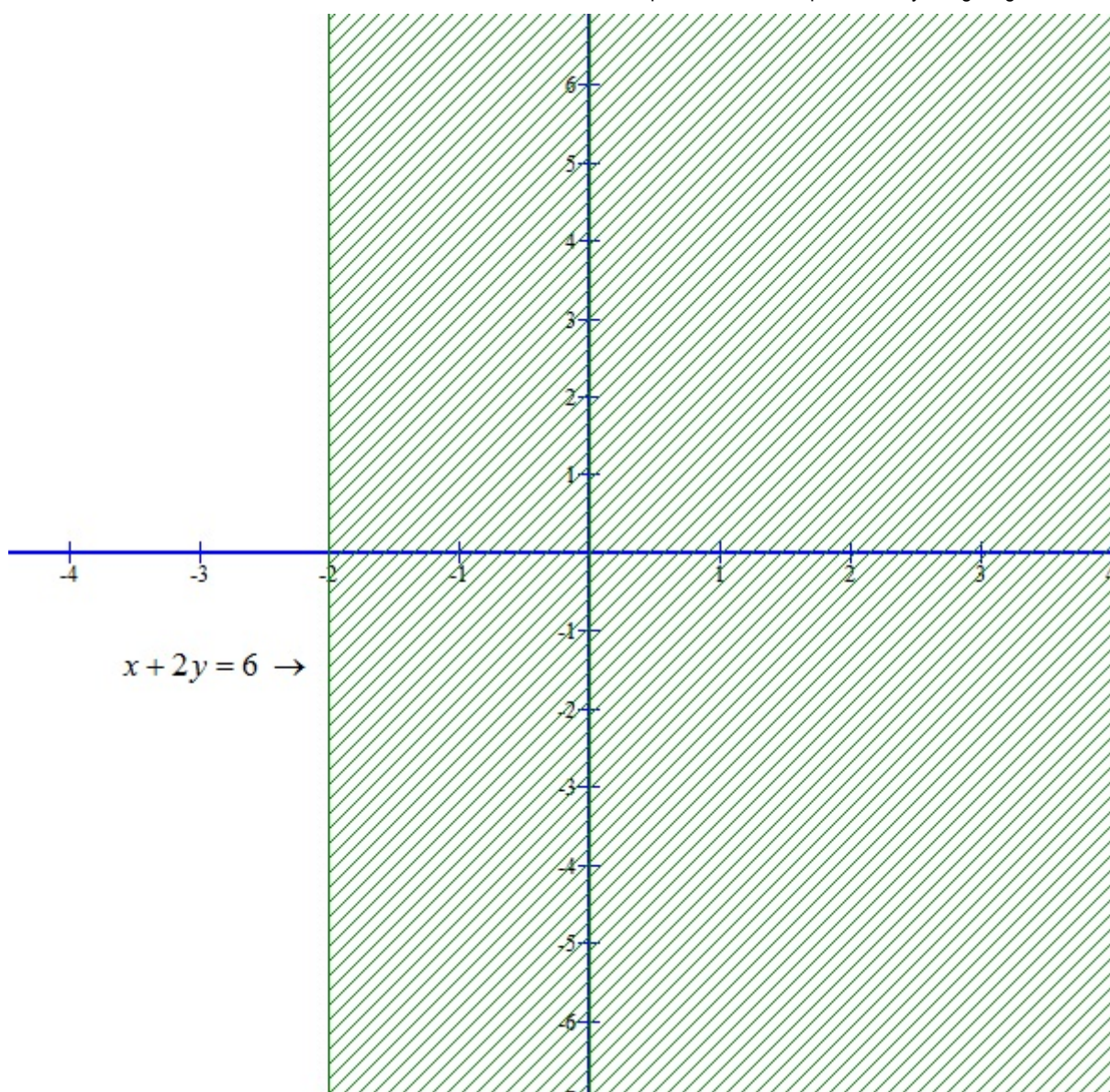
We have,

$$x + 2 \geq 0 \dots\dots\dots (i)$$

Converting the inequation into equation, we obtain, $x = -2$. Clearly, it is a line parallel to y-axis. This line divides the xy – plane in two parts. One part on the LHS of $x = -2$ and the other on its RHS.

Putting $x = 0$ in the inequation (i), we get $2 \geq 0$

we find that the point $(0,0)$ satisfies the inequality. So, the region represented by the given inequation is the shaded region shown below:



$$x + 2y = 6 \rightarrow$$

We have

$$x - 2y < 0$$

Converting the inequation into equation, we obtain,

$$x < 2y$$

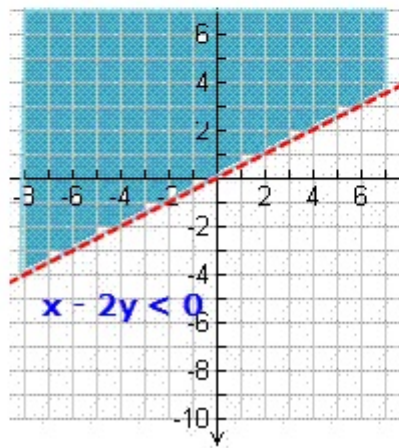
To determine the region represented by the given inequality consider the point $o(0,0)$

Putting $x = 0$ and $y = 0$ in equation we have

$$0 < 0$$

It is not possible. Clearly $o(0,0)$ does not satisfy the inequality.

So, the region represented by the given inequation is the shaded region shown below:



Linear Inequations Ex 15.5 Q5

We have,

$$-3x + 2y \leq 6 \dots\dots\dots (i)$$

Converting the given inequation into equation, we obtain, $-3x + 2y = 6$.

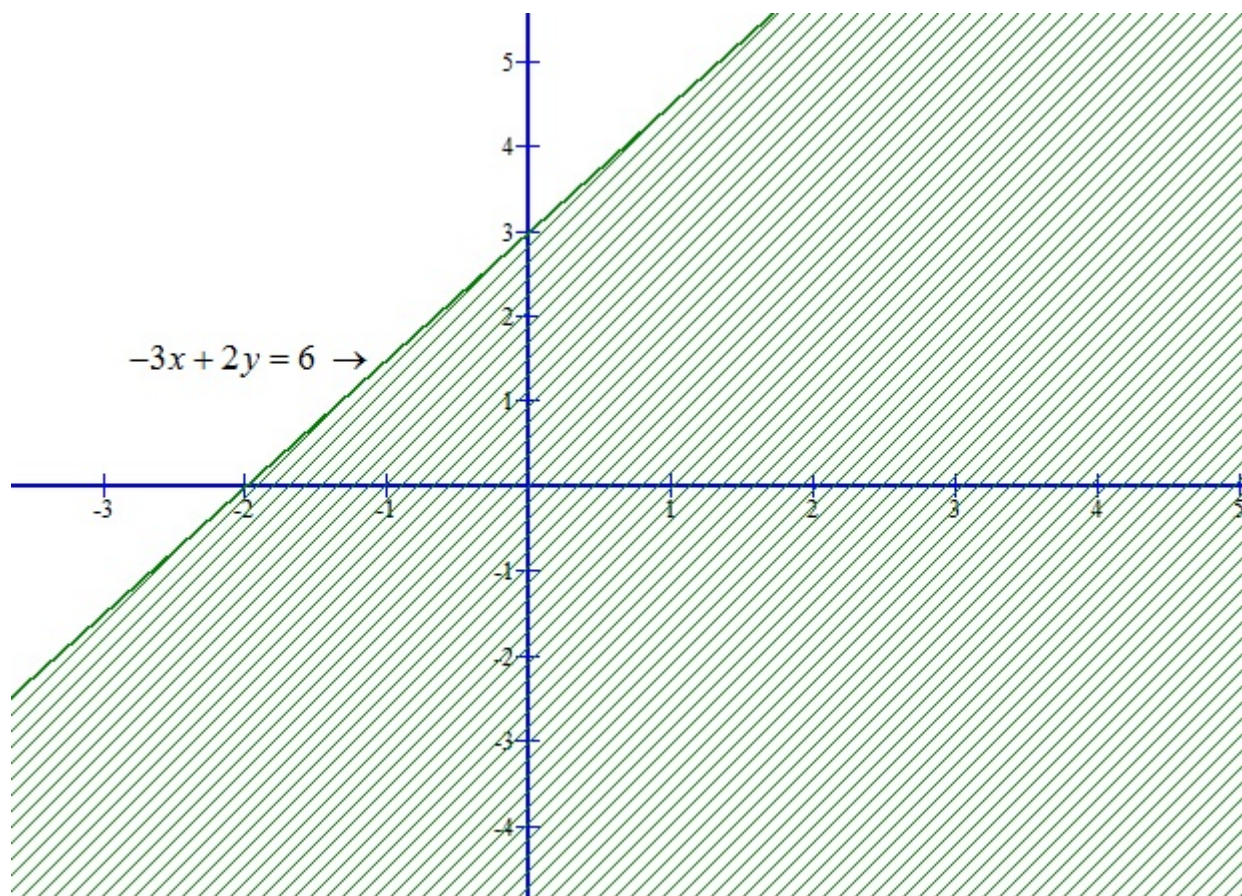
$$\text{Putting } x = 0, \text{ we get } y = \frac{6}{2} = 3$$

$$\text{Putting } y = 0, \text{ we get } x = \frac{-6}{3} = -2$$

we plot these points and join them by a thick line. This line meets x-axis at $(-2, 0)$ and y-axis at $(0,3)$. This line divides the xy -plan into two parts. To determine the region represented by the given inequality, consider the point $o(0,0)$.

Putting $x = 0$ and $y = 0$ in the inequation (i), we get, $0 \leq 6$

Clearly, $(0,0)$ satisfies the inequality. So the region containing the origin is represented by the given inequation as shown below.



Linear Inequations Ex 15.5 Q6

We have,

$$x \leq 8 - 4y \dots\dots\dots (i)$$

Converting the given inequation into equation, we obtain, $x = 8 - 4y$.

Putting $y = 0$, we get $x = 8$

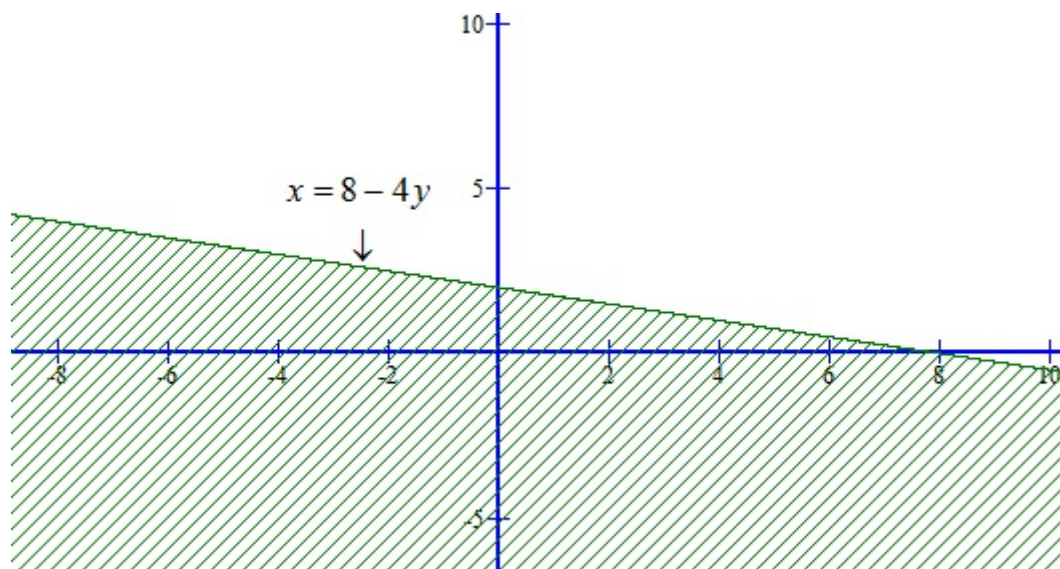
Putting $x = 0$, we get $y = \frac{8}{4} = 2$

So, this line meets x-axis at $(8,0)$ and y-axis at $(0,2)$.

we plot these points and join them by a thick line. This line divides the xy -plane in two parts. To determine the region represented the given inequation consider the point $O(0,0)$.

Putting $x = 0$ and $y = 0$ in the inequation (i), we get $0 \leq 8$

Clearly, $(0,0)$ satisfies the inequality. so, the region containing the origin is represented by the given inequation as shown below:



Linear Inequalities Ex 15.5 Q7

We have,

$$0 \leq 2x - 5y + 10 \dots\dots\dots (i)$$

Converting the given inequation into equation, we obtain, $2x - 5y + 10 = 0$.

Putting $x = 0$, we get $y = \frac{-10}{-5} = 2$

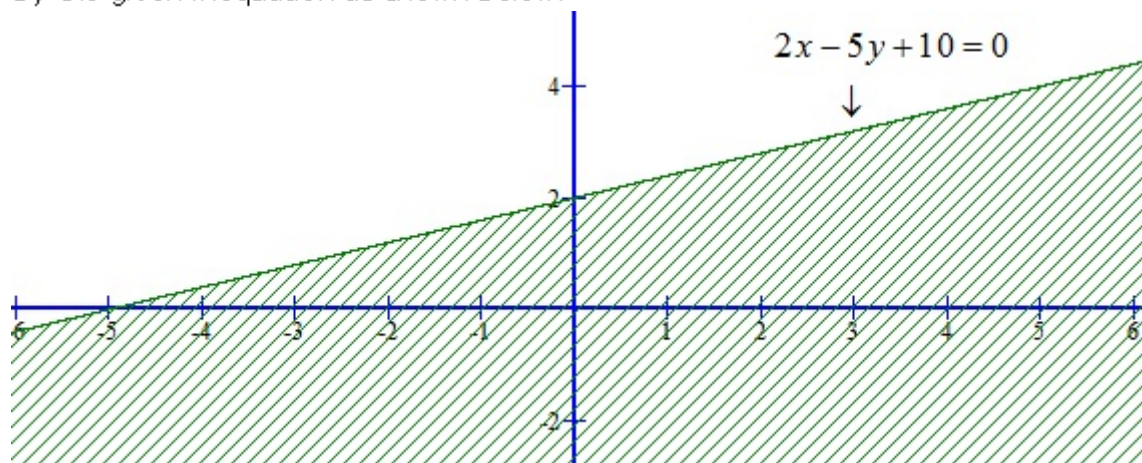
Putting $y = 0$, we get $x = \frac{-10}{2} = -5$

So, this line meets x-axis at $(-5, 0)$ and y-axis at $(0, 2)$.

we plot these points and join them by a thick line. This line divides the xy -plane in two parts. To determine the region represented by the given inequation consider the point $0(0, 0)$.

Putting $x = 0$ and $y = 0$ in the inequation (i), we get $0 \leq 10$

Clearly, $(0, 0)$ satisfies the inequation. so, the region containing the origin is represented by the given inequation as shown below:



Linear Inequalities Ex 15.5 Q8

We have,

$$3y \geq 6 - 2x \dots\dots\dots (i)$$

Converting the given inequation into equation, we obtain, $3y = 6 - 2x$.

Putting $x = 0$, we get $y = \frac{6}{3} = 2$

Putting $y = 0$, we get $x = \frac{6}{2} = 3$

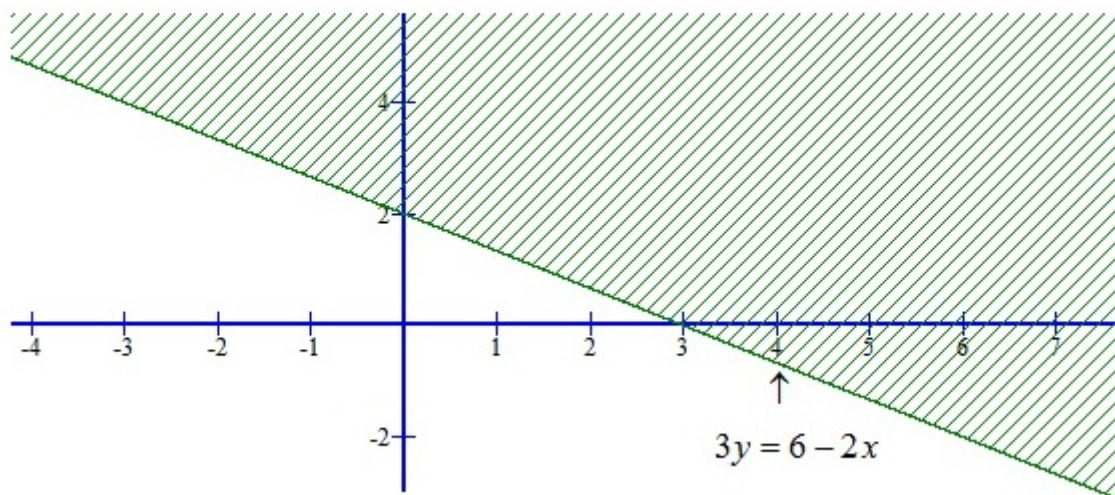
So, this line meets x-axis at $(3,0)$ and y-axis at $(0,2)$.

we plot these points and join them by a thick line. This line divides the xy -plane in two parts. To determine the region represented by the given inequality consider the point $O(0,0)$.

Putting $x = 0$ and $y = 0$ in the inequation (i), we get $0 \geq 6$ it is not possible.

\therefore we find that the point $(0,0)$ does not satisfy the equation $3y \geq 6 - 2x$.

So, the region represented by the given equation is shaded region shown below:



Linear Inequations Ex 15.5 Q9

We have,

$$y \geq 2x - 8 \dots\dots\dots (i)$$

Converting the given inequation into equation, we obtain, $y = 2x - 8$.

Putting $x = 0$, we get $y = -8$

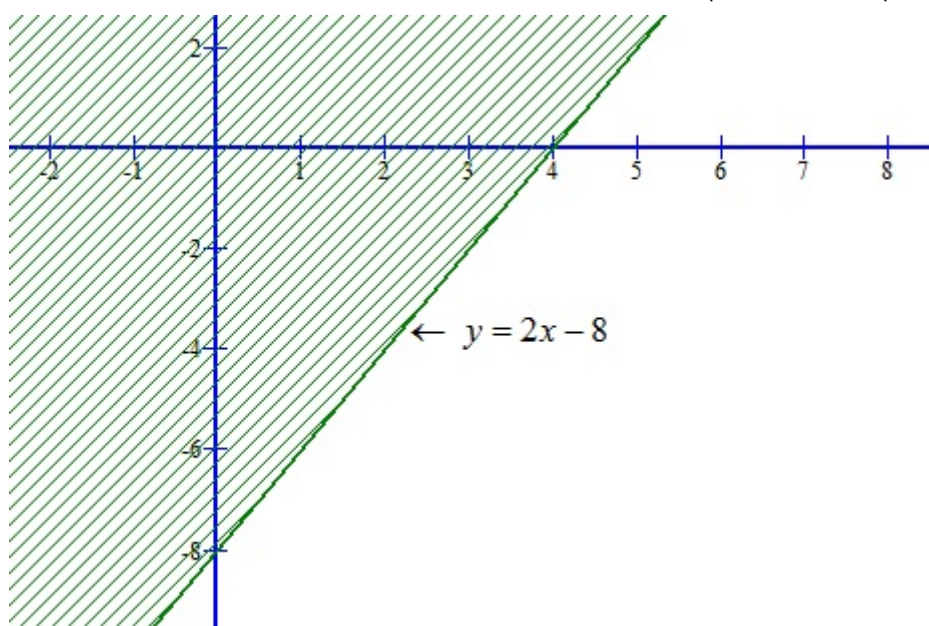
Putting $y = 0$, we get $x = \frac{8}{2} = 4$

So, this line meets x-axis at $(4,0)$ and y-axis at $(0, -8)$.

we plot these points and join them by a line. This line divides the xy -plane in two parts. To determine the region represented by the given inequality consider the point $O(0,0)$.

Putting $x = 0$ and $y = 0$ in the inequation (i), we get $0 \geq -8$

Clearly, $(0,0)$ satisfies the inequality the region containing the origin is represented by the given inequation as show below:



Linear Inequations Ex 15.5 Q10

We have,

$$\begin{aligned}
 & 3x - 2y \leq x + y - 8 \\
 \Rightarrow & 3x - x \leq y + 2y - 8 \\
 \Rightarrow & 2x \leq 3y - 8 \dots\dots\dots (i)
 \end{aligned}$$

Converting the given inequation into equation, we obtain, $2x = 3y - 8$.

Putting $y = 0$, we get $x = \frac{-8}{2} = -4$

Putting $x = 0$, we get $y = \frac{8}{3}$.

So, this line meets x-axis at $(-4,0)$ and y-axis at $(0, \frac{8}{3})$.

we plot these points and join them by a line. This line divides the xy -plane in two parts. To determine the region represented by the given inequality consider the point $O(0,0)$.

Putting $x = 0$ and $y = 0$ in the inequation (i), we get $0 \leq -8$ It is not possible.

\therefore we find that the point $(0,0)$ does not satisfy the inequation $2x \leq 3y - 8$. so, the region represented by the given equation is the shaded region.

