

Related Problems with Solutions

Problem 3:

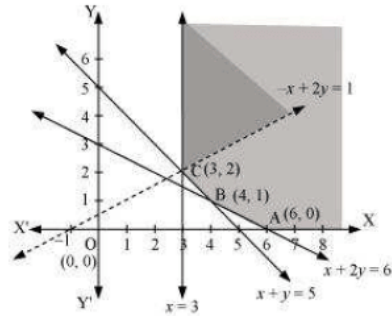
Question 9:

Maximise $Z = -x + 2y$, subject to the constraints:

$$x \geq 3, x + y \geq 5, x + 2y \geq 6, y \geq 0.$$

Answer

The feasible region determined by the constraints, $x \geq 3, x + y \geq 5, x + 2y \geq 6$, and $y \geq 0$, is as follows.



It can be seen that the feasible region is unbounded.

The values of Z at corner points A (6, 0), B (4, 1), and C (3, 2) are as follows.

Corner point	$Z = -x + 2y$
A(6, 0)	$Z = -6$
B(4, 1)	$Z = -2$
C(3, 2)	$Z = 1$

As the feasible region is unbounded, therefore, $Z = 1$ may or may not be the maximum value.

For this, we graph the inequality, $-x + 2y > 1$, and check whether the resulting half plane has points in common with the feasible region or not.

The resulting feasible region has points in common with the feasible region.

Therefore, $Z = 1$ is not the maximum value. Z has no maximum value.