

Related Problems with Solutions

Problem 1:

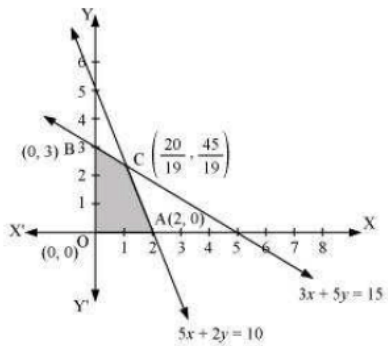
Question ●

Maximise $Z = 5x + 3y$

subject to $3x + 5y \leq 15$, $5x + 2y \leq 10$, $x \geq 0$, $y \geq 0$.

Answer

The feasible region determined by the system of constraints, $3x + 5y \leq 15$, $5x + 2y \leq 10$, $x \geq 0$, and $y \geq 0$, are as follows.



The corner points of the feasible region are O (0, 0), A (2, 0), B (0, 3), and $C\left(\frac{20}{19}, \frac{45}{19}\right)$.
The values of Z at these corner points are as follows.

Corner point	$Z = 5x + 3y$	
O(0, 0)	0	
A(2, 0)	10	
B(0, 3)	9	
$C\left(\frac{20}{19}, \frac{45}{19}\right)$	$\frac{235}{19}$	→ Maximum

Therefore, the maximum value of Z is $\frac{235}{19}$ at the point $\left(\frac{20}{19}, \frac{45}{19}\right)$.