OM - Home work

Akshay Bankar
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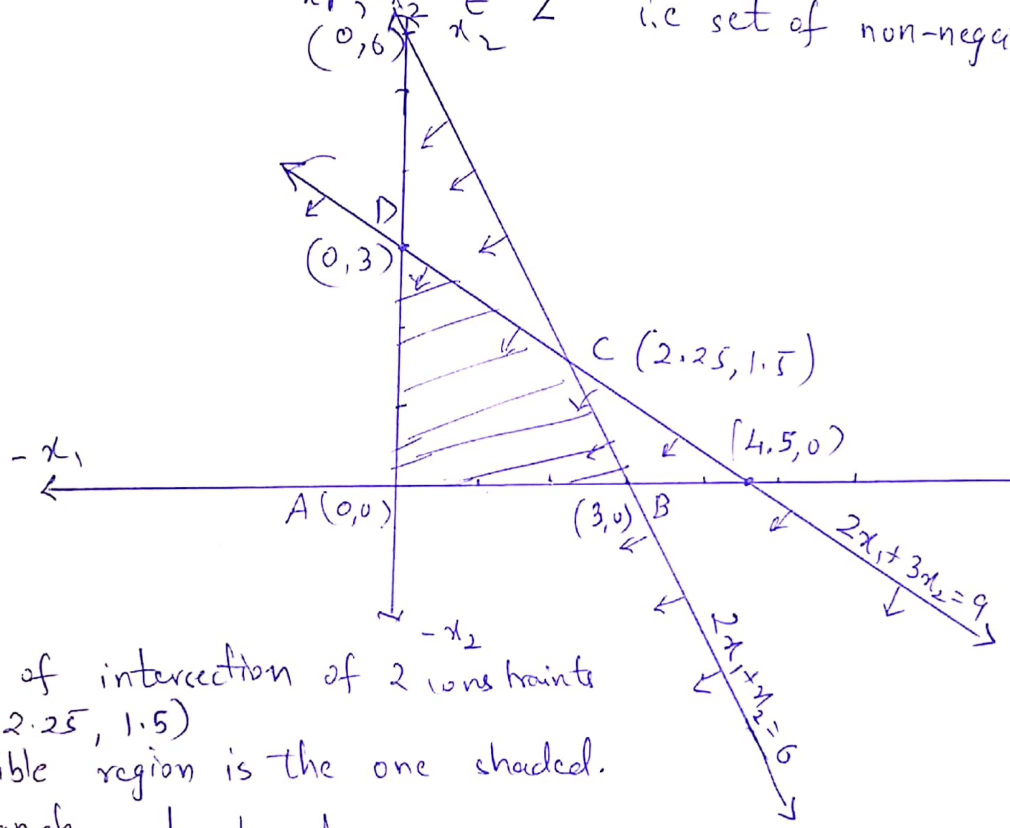
Q-ID : 99626

minimize $Z = 3x_1 + 4x_2$

subject to $2x_1 + x_2 \leq 6$,
$2x_1 + 3x_2 \leq 9$

with $x_1, x_2 \in Z^*$ i.e set of non-negative integers.



- The point of intersection of 2 constraints is C(2.25, 1.5)
- The feasible region is the one shaded.
- For branch and bound, we first find solution for LP problem by relaxing the IP constraint.
- Hence z is minimized at corners of polygon ABCD.

$\therefore$ at D(0, 3) $z = 0 + 4 \times 3 = 12$

at C(2.25, 1.5), $z = 3 \times 2.25 + 4 \times 1.5 = 12.75$

at B(3, 0), $z = 3 \times 3 + 4 \times 0 = 9$

at A(0, 0), $z = 0 \times 3 + 4 \times 0 = 0$.

The $Z^*_{IP} = 0$ at (0,0) which is minimum non-negative integer x_1 & x_2.

Hence $Z^*_{IP} = Z^*_{LP} = 0$ at (0,0).