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NP-complete Problems

NP-complete Problems

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100%

Submit your assignment

DUE DATE Oct 19, 12:29 PM IST **ATTEMPTS** 3 every 8 hours

Try again

1. How many satisfying assignments does the following formula have? **1 / 1 point**

$(x_1 \vee \overline{x}_2 \vee \overline{x}_3)(x_1 \vee x_2)(\overline{x}_1 \vee \overline{x}_2)$

Receive grade

TO PASS 60% or higher

3

Grade 100%

View Feedback

We keep your highest score

Correct

That's right!

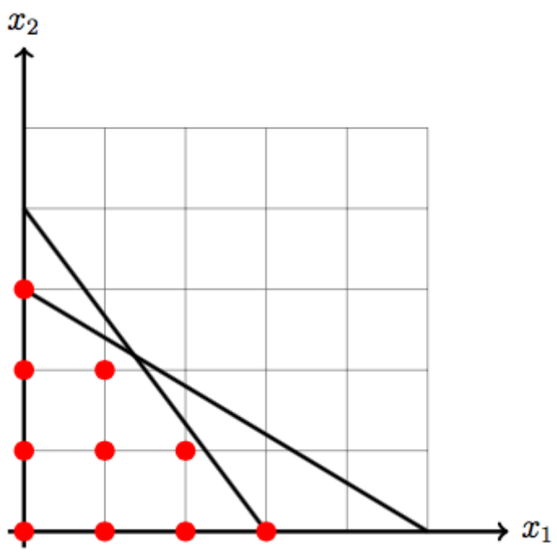
2. How many integer solutions does the following linear program have? **1 / 1 point**

$x_1 \geq 0, \quad x_2 \geq 0, \quad 4x_1 + 3x_2 \leq 12, \quad 3x_1 + 5x_2 \leq 15$

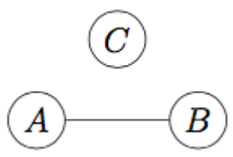
10

Correct

Right!

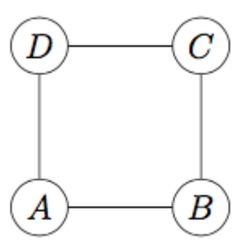


3. Consider the following graph: **1 / 1 point**



It has 6 different independent sets: empty set, $\{A\}$, $\{B\}$, $\{C\}$, $\{A, C\}$, $\{B, C\}$.

How many different independent sets does the following graph have?



7

Correct

That's right! They are empty set, $\{A\}$, $\{B\}$, $\{C\}$, $\{D\}$, $\{A, C\}$, $\{B, D\}$.

4. In the 3-coloring problem, you are given an undirected graph and the goal is to assign one of three available colors to its vertices such that the ends of each edge of the graph receive different colors. This is clearly a search problem: given a graph and a coloring of its vertices, one can check in polynomial time whether there are only three different colors and that no edge is monochromatic. This problem is known to be NP-complete. Do we have a polynomial time algorithm for this problem? **1 / 1 point**

- Yes, this problem can be solved in polynomial time.