CSCI-4113
Assignment 0

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September 16, 2024

Contents

0.1 Question 1

Given a graph $G = (V, E)$. An ILP for the Dominating Set $D \subseteq V$ over G can be:

- First we define the variable $x_v = \{0, 1\}$ in which $x_v = 1, v \in D$ and 0 otherwise

- The objective function is to minimize $\sum_{v \in V} c_v x_v$

- We now define a neighbor set $N_v \subseteq V$ to be the set of vertices directly connected to a vetrex $v \in V$ unioned with the vertex itself

  Such that we have a constraint that states that the $\sum_{v \in V} x_v \geq 1, \forall N_v$
  {What this basically is trying to say is that given a vertex, at least it or one of its neighbors needs to be in D}