

Discrete Math. Graduation Exam

May 19, 2018

1. Let $X = \{1, 2, 3, 4, 5, 6\}$. Find the number of ordered pairs (A, B) satisfy $A \subseteq B \subseteq X$.
2. Solve the recurrence relation $a_n = 3a_{n-1} - 4n + 3 \cdot 2^n$ with initial condition $a_1 = 8$.
3. (a) Show that in any simple, connected, planar graph, $e \leq 3v - 6$.
(b) Use Euler's formula to show that the complete graph K_5 is not planar.

The End