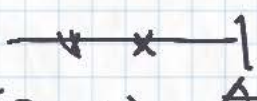


Homework problems:

2.1

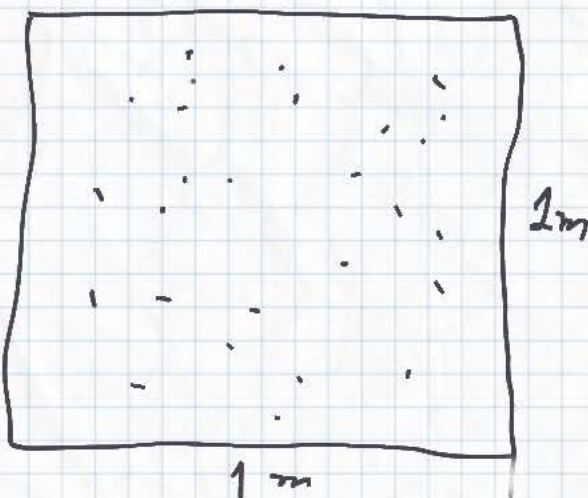
① 45 pts

Prove: $\sum_{i=1}^{45} d(P_i, A) \neq \sum_{i=1}^{45} d(P_i, B)$



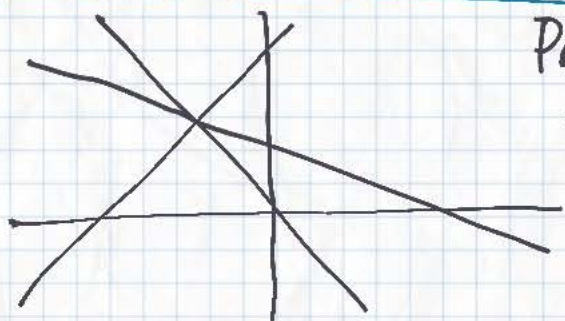
② 51 points in

Prove: There is
a $20\text{ cm} \times 20\text{ cm}$
square which
covers ≥ 3 points



③ If $2, 5 \nmid n$ then there exists
 $m = 11 \dots 11$ such that $n \mid m$.

Map of the USA (lat/long) (2.2)



Prove: it can be colored in 2 colors so that no two adjacent states have the same color

How many states? (assuming that no two lines are || nor any three *)

Induction: $P_1, P_2, \dots, P_n, \dots$
- a sequence of propositions.

Suppose:

1° P_1 is true (Base of induction)

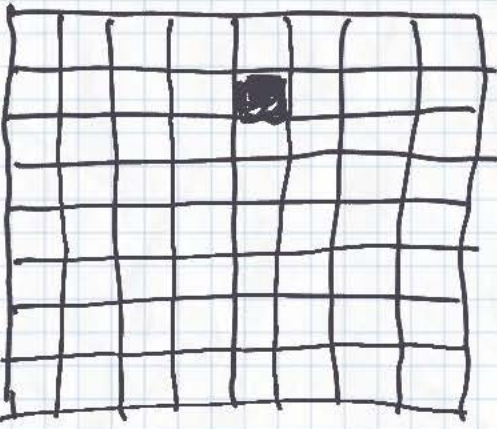
2° For $n \geq 1$, $P_n \Rightarrow P_{n+1}$ is true
(Step of induction)

Then P_n is true for all $n \geq 1$.

Proof (?): n - smallest s.t. P_n is false.
Then $P_{n-1}, P_{n-1} \Rightarrow P_n$ are true $\Rightarrow P_n$ is true

Tromino on the chess board (2.3)

Tile

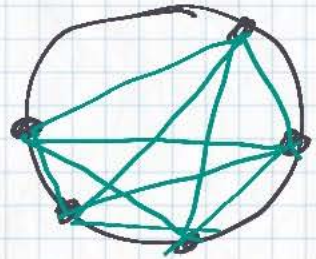


with

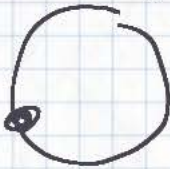


Chords in Discoland

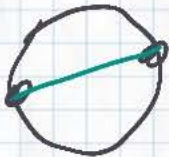
n points are connected by all chords, no 3 \times .
How many states?



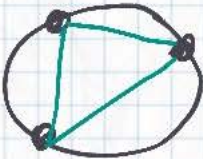
$n=1$



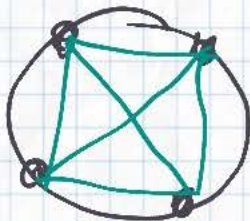
$n=2$



$n=3$



$n=4$



$n=5$

