GRAPH TO BE DRAWN:

\[ G = (V, E) \]

Points in plane \( \Rightarrow \) Line segments to be drawn

GRAPH TRACED BY PEN MOVEMENTS

\[ G' = (V, E') \]

**Note:** All degrees in \( G' \) are even

GRAPH TRACED BY PEN WHEN IN UP POSITION

i.e. Wasted pen movement

\[ G'' = (V, E'') \quad E'' = E' \setminus E \]

\[ \text{Degree}_{G''}(v) \equiv \text{Degree}_{G}(v) \pmod{2} \]

If we wish to minimize wasted pen movement, then \( E'' \) is a perfect matching on the odd degree vertices of \( G \).