

# Karp reduction

Remember the 2-colorability problem:

- ▶ Input: Graph  $G = (V, E)$
- ▶ Question: Can we 2-color the vertices of  $G$  so that no two adjacent vertices get the same color?

and consider the 3-colorability problem:

- ▶ Input: Graph  $G = (V, E)$
- ▶ Question: Can we 3-color the vertices of  $G$  so that no two adjacent vertices get the same color?

We will show that 2-colorability  $\propto$  3-colorability.