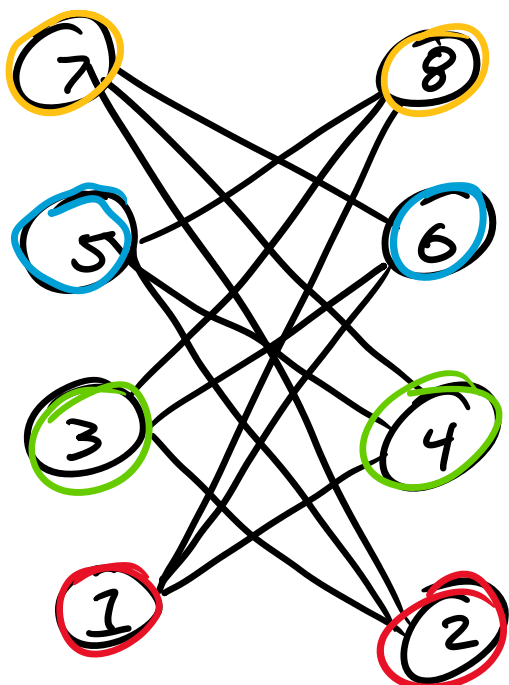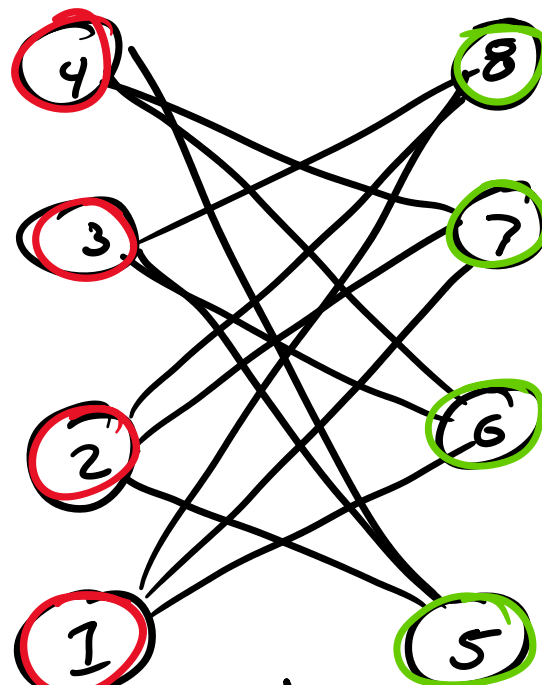①

a

#colors = 4

b

#colors = 2

② $\boxed{\chi(G) = 2}$ as G is bipartite

Other relevant bounds:

$\chi(G) \geq 2$ as G is nonempty

$\chi(G) \geq \omega(G) = 2$

$\chi(G) \leq \Delta(G) = 3$