

Problem 1

I.H. $P(n) ::=$ every n -node G is $w+1$ colorable.
^{width w}

B.C. $P(1) \checkmark$

I.S. assume $n+1$ -node G , remove $n+1$ st,
 color with $w+1$, add $n+1$ st, $N(n+1\text{st}) = w$
 \rightarrow color with $w+1 \checkmark$

□

Problem 2

1. Proof by ~~✗~~, assume sub is \neg planar
 but G planar $\rightarrow G \neg$ planar ~~✗~~

2.

I.H. $P(n) ::=$ n -node G is 6 colorable.

B.C. $P(1) \checkmark$

I.S. remove the ≤ 5 degree ~~from~~
 $(n+1)$ -node G' , color w/ 6,
 add back, ≤ 6 colors needed. \checkmark

□