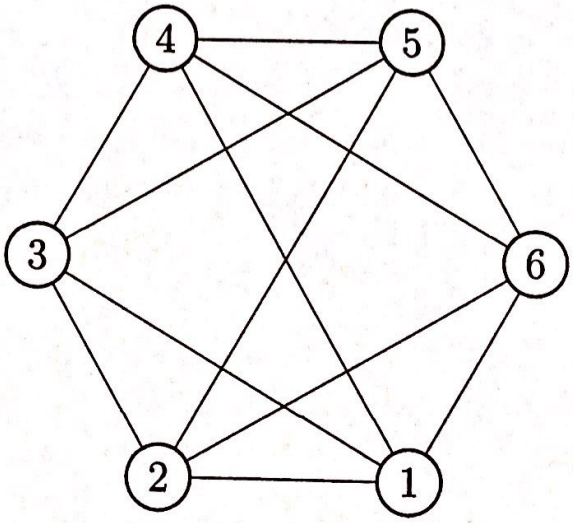
Vertex	1	2	3	4	5	6
Color (R,B,G)	R	B	G	B	R	G

Edge	Color left endpoint	Color right endpoint
(1,2)	R	B
(1,3)	R	G
(1,4)	R	B
(1,6)	R	G
(2,3)	B	G
(2,5)	B	R
(2,6)	B	G
(3,4)	G	B
(3,5)	G	R
(4,5)	B	R
(4,6)	B	G
(5,6)	R	G



123456	Bad edge	Color on endpoints
RBGRRR	(1,6)	R
RBGRRB	(1,5)	R
RBGRRG	(1,5)	R
RBGRBR	(1,6)	R
RBGRBB	(2,6)	R
RBGRBG	(1,4)	R
RBGRGR	(1,4)	R
RBGRGB	(1,4)	R
RBGRGG	(1,4)	R
RBGBRR	(1,6)	R
RBGBRB	(1,5)	R
RBGBRG	(1,5)	R
RBGBBR	(1,6)	R
RBGBBB	(2,6)	B
RBGBBG	(4,5)	B
RBGBGR	(1,6)	R
RBGBGB	(2,6)	B
RBGBGG	(5,6)	G
RBGGRR	(3,4)	G
RBGGRB	(3,4)	R
RBGGRG	(1,6)	R
RBGGBR	(1,5)	R
RBGGBB	(1,6)	B
RBGGBG	(3,4)	G
RBGGGR	(1,6)	R
RBGGGB	(3,4)	G
RBGGGG	(3,4)	G

351 NP 4.

11. a) n vertices $n=200$

If each edge has two endpoints

1st vertex $n-1$ times

2nd vertex $n-2$ times

$$\frac{(n-1+1)(n-2+1)}{2} = \frac{n^2-n}{2} \quad \Theta(n^2)$$

b) If it is not c-colorable

$$(n-c)^c \cdot \left(\frac{(n-1+1)(n-2+1)}{2}\right) \Rightarrow \quad \Theta((n-c)^c n^2)$$

$$\Rightarrow \Theta(n^c \cdot n^2)$$