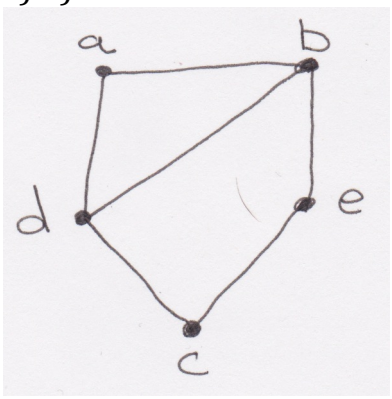
Raymond Elward
CSC 202
Homework 8
5/31/2010

1) a) G1:



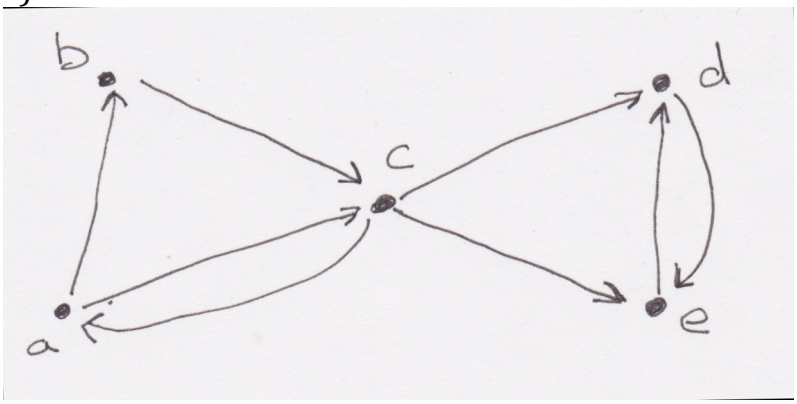
b)

Vertex	*Vertices Adjacent*
a	b, d
b	a, d, e
c	d, e
d	a, b, c
e	b, c

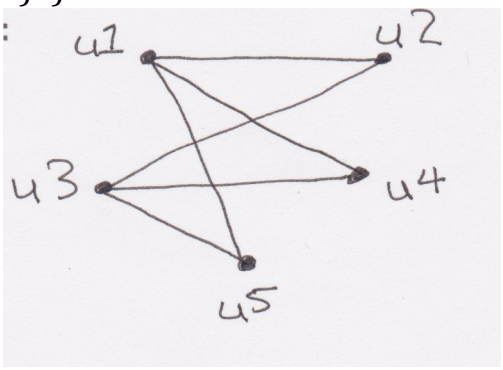
c)

	a	b	c	d	e
a	0	1	0	1	0
b	1	0	0	1	1
c	0	0	0	1	1
d	1	1	1	0	0
e	0	1	1	0	0

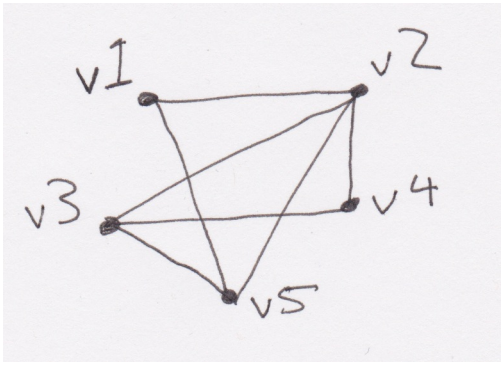
2)



3)a) G2:

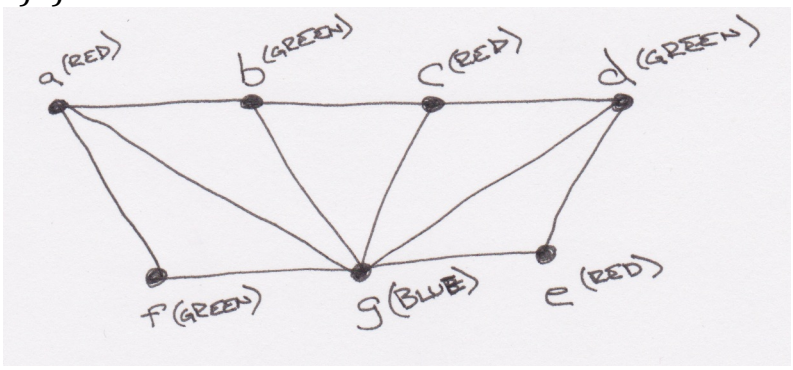


G3:



b) They are not isomorphic. My compelling reasoning behind this is simply because G2 has 6 edges while G3 has 7 edges, so they can't be isomorphic.

4)a) G4:



b) X(G4) = 3. One obvious reason why this chromatic number cannot be less is because the circuit (a, ab, b, bc, c, d, de, e, eg, g, gf, f, fa, a), which is a subset of the graph that includes every vertex, is odd in number that makes it so it's impossible to get 2 as the chromatic number. See the part a graph for the 'colors' that allow us to do it with 3 colors.

5)a)29 * 418 = 12,122 different ways.

b) 29 + 418 = 447 different ways.

6) a) 5^{15} = 30517578125 different combinations of answers.
b) 6^{15} = 470184984576 different combinations of answers.

7) a) 26 * 26 * 26 * 26 = 26^4 = 456976 different initials.
b) 1 * 26 * 26 * 26 = 26^3 = 17576 different initials starting with 'a'.
c) 26 * 25 * 24 * 23 = 35880 different initials.

8) 1 + 2 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 = 1 + 2 + 4 + 8 + 16 + 32 + 64 + 128 = 255 bit strings with 7 or less digits.

9) I found the adjacency lists and graphs easily understandable and the most enjoyable portion of the week. The most frustrating thing I found about the class was the lack of examples to study from going into the final (the way we got example questions for the midterm would have been nice.).