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CPTS 453

Graph Theory

10-16-2019

Homework 4

1.

Forest of 7 trees G =

Each T in the G has 5 vertices,

There are no cycles in a forest therefore the

We know that

We already know

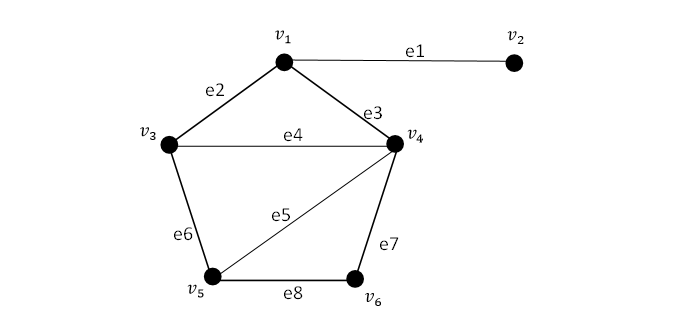
Since each T in G is a tree then we know that

We already know each tree has 5 vertices so,

Recall,

Therefore

2.



A)

Basis of

So

B)

We know that

Basis of

C)

No nonzero vector exists

3.

4.

Has 8 vertices and 28 edges.

We know the equation

The length of each face is

Every edge in belongs to 2 faces.

Since we know that there are 28 edges then we know

If we plug our numbers back into the equation we get,

Which is not true therefore cannot be drawn on a torus

5.

A)

1 face so, f = 1

6 edges so, m = 6

1 distinct vertex so, n = 1

We plug it in and we get

B)

**No**, Nothing changes there is still 1 distinct vertex so the equation wouldn’t change.

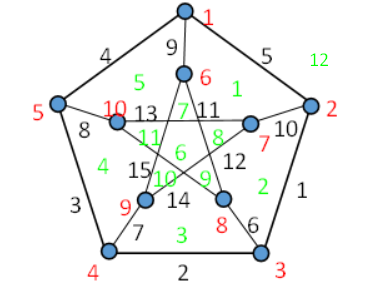
6.

Peterson Graph

Number of Edges = 15

Number of Vertices = 10

Number of Faces = 12



Euler’s Formula for a planar graph is

Therefore the Peterson graph is not planar.