

complement graph.

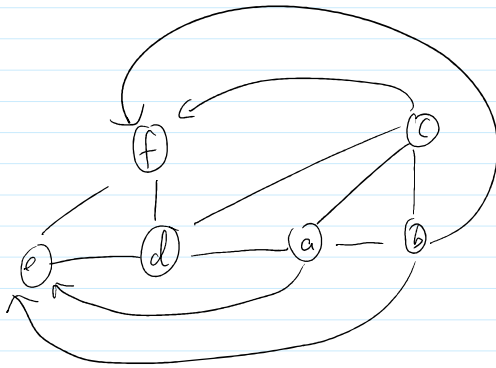
A walk is a subset of trail.

1)
a) A path is not a subset of circuit and a circuit is not a subset of path, there will be some path which can be also be a path, but there are also some cases that is path which is not a circuit, vice versa.

b) cycle is not always a trail
A trail is not always cycle.

c) trail is not always open walk.
open walk is not always a trail

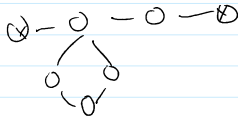
2)



3)

$$4 \times 6 = 24$$

4) If $x-y$ is a trail, let's pick the shortest length trail, say
 $(x, z_1)(z_1, z_2) \dots (z_n, y)$, if this trail is not already A-path.
 $(x, z_1) \dots (z_k \dots z_{k+1}) \dots (z_m \dots z_{k+1}) \dots (z_n, y) \quad k < m, z_k = z_n$



There is a contradiction b/c a shorter exist. Therefore a shortest length is a path.

5)

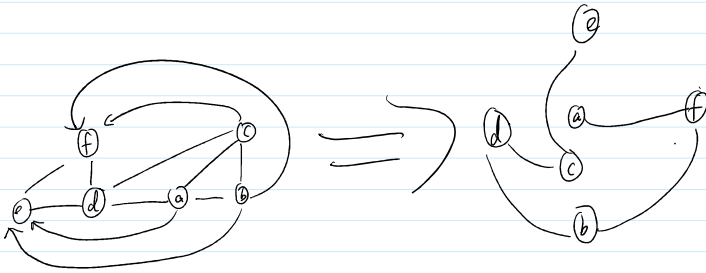


spanning subgraph $m=3$ $2^3=8$.

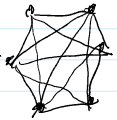
induced subgraph $= 2^3=8$.

$$\text{subgraph: } \binom{3}{0} + \binom{3}{1} + \binom{3}{2} + \binom{3}{3} \\ = 1 + 3 + 6 + 3 = 13$$

6)



7)



$\Rightarrow 15$ edge