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Algorithms

Homework 1

1. a) {{a},{b},{c},{ab},{ac},{bc},{abc}}  
   b) |S| = 3, |T| = 3  
   c) {a,b,c,0,{d,e}}  
   d) {b,c}
2. 3,5,-4
3. a)   
   b)   
   c)
4. (p. 24)  
   a) Is this graph Eulerian?  
   b)The Koenigsburg bridge problem has no solution. Every vertex would need at least one more edge coming out of it, so that the degree of each edge is even. This could be achieved by adding 2 more bridges.
5. (p. 38)  
   a) i. Every entry is a ‘1’.  
    ii. A column with a ‘1’ in it for some vertex a corresponds to another vertex which eventually connects back to a.  
    iii. There are only 0’s in some column and corresponding row.  
   b) i. Every vertex is in every list.  
    ii. Something in a vertex a’s list has a vertex in its own list that eventually is adjacent to a.  
    iii. A vertex’s list is empty/points to NULL.