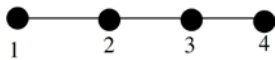


341 Introduction to Bioinformatics:

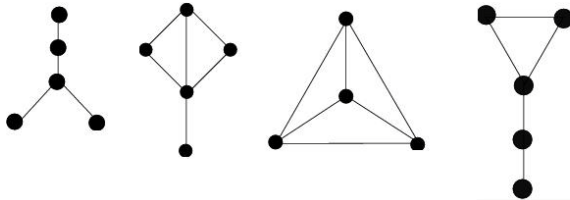
Biological Networks

Tutorial 1 – January 28, 2010

1. Consider a path P_4 with vertex set $\{1,2,3,4\}$ and edge set $\{12,23,34\}$ (illustrated below). How many automorphisms does G have?



2. Count the automorphisms of P_n , C_n , and K_n , where n is any positive integer.
3. Enumerate automorphism orbits of the four graphs given below.



4. Describe the information flow within a cell, from DNA to metabolism. Name the processes.
5. What are the four levels of protein structure?