Introduction to Probability
Worksheet #1

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1. Sample space for network reliability

Consider a system of four computers each with a direct communication link to each other. The network is functional if each computer can communicate to any other computer over functioning network links, possibly with one or more intermediate computers.

1. Draw a graph which represents the network when all links are working.

2. Note that if some of the network connections between computers are not functioning then we can represent the state of the system by drawing in only the working components. Draw all possible subnetworks for which the system is functional, on the back of the page. Organize the diagrams by the number of working components. Label each diagram by the corresponding binary state representation (discussed in class).

3. What is the common geometric characteristic of all the subgraphs?