

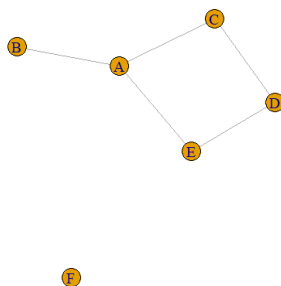
Exercises

1. Suppose that the joint distribution of a discrete variable, X and two continuous variables Y and Z is

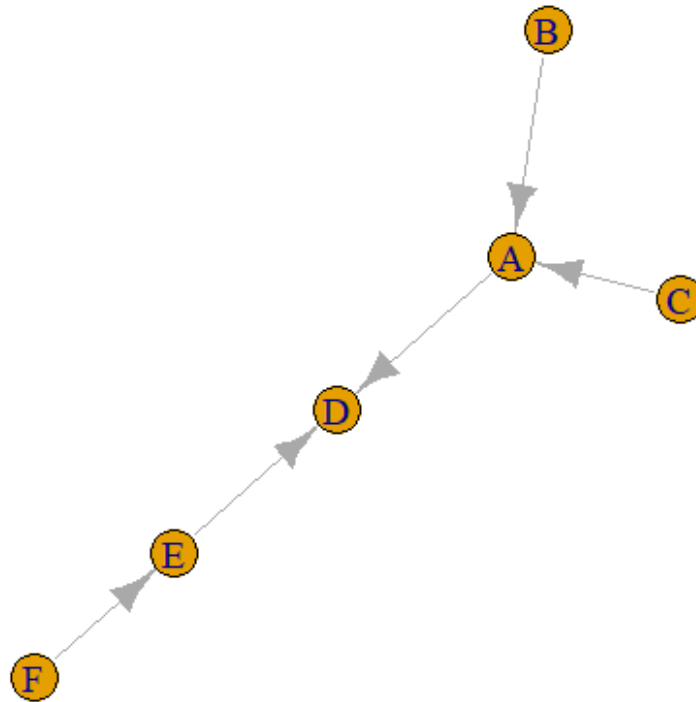
$$f(x, y, z) \propto \frac{z^{\alpha+x}}{x!} e^{-(\beta+y+1)z}.$$



- (a) Are X and Y conditionally independent given Z ? Why?
 - (b) Are X and Y independent? Why?
 - (c) Draw an undirected graph to represent the dependence structure of X , Y and Z .
 - (d) Draw a directed graph to represent the dependence structure of X , Y and Z .
2. Consider the following undirected graph.



- (a) What are the maximal cliques in this graph?
 - (b) What is the dependence structure represented by this graph?
3. Consider the following directed graph.



- (a) Are nodes A and F independent? Why?
- (b) Are nodes A and F independent given D ? Why?