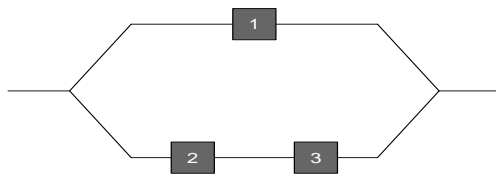


Homework 3
MTH 3210 Probability and Statistics
Due Thu., Feb. 21

Unless stated otherwise, you must **show your work** to receive full credit.

Read These Sections of the Book	Then Do These Problems
2.4	Problem 1 (below), 46, 47, 49, 51, 59, 67
2.5	Problem 2 (below), 70, 74, 78

1. Suppose that 15% of the population of a country are unemployed women and 25% of the country are unemployed. What's the conditional probability that a randomly selected person is a women, given that the person is unemployed? What percent of unemployed people are women?
2. (a) Consider the system of electrical components connected as shown below.

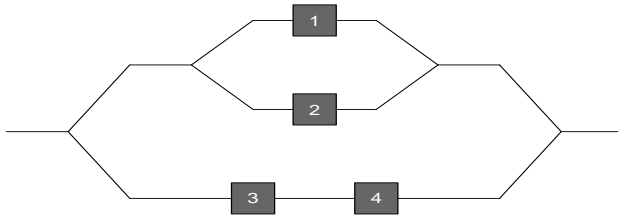


The subsystem containing component 1 works only if 1 works. Components 2 and 3 are connected in series, so that subsystem works only if both 2 and 3 work. The entire system works only if at least one of the subsystems works. Let

$A_i =$ The i th component works.

Assume the A_i 's are **independent** events and suppose $P(A_i) = 0.9$ for every i . Find the probability that the system works.

(b) Now consider the system of electrical components connected as shown below.



Components 1 and 2 are connected in parallel, so that subsystem works only if either 1 or 2 works. Since 3 and 4 are connected in parallel, that subsystem works if both 3 and 4 work. The entire system works only if at least one of the subsystems works. Let

$A_i =$ The i th component works.

Assume the A_i 's are **independent** events and suppose $P(A_i) = 0.9$ for every i . Find the probability that the system works.