Lab 2

1. Patients arriving at a hospital outpatient clinic can select one of two stations for service. Suppose that physicians are randomly assigned to the stations and that the patients have no station preference. So you could have all three patients at one station. Three patients arrive at the clinic and their selection of stations is observed.
   (a) List the outcomes in this set.
   (b) List the outcomes of set A where each station received at least one patient.

2. A coin is tossed 4 times. Find the number of all possible sequences.

3. Find n(P(S) if S = {2,4,6,8,10}

3. For each positive integer n $\in$ N, let $A_n = \{n, 2n, 3n....\}$, the multiples of n. Find :
   (a) $A2 \bigcap A4$
   (b) $A2 \bigcup A4$
   (c) $A2 \bigcap A7$
   (d) $A6 \bigcap A8$
   (e) $A5 \bigcap A20$
   (f) $A5 \bigcup A20$

Questions 1.81-1.85

1.81.Prove: 2+4+6+ … +2n = n(n+1)

1.82 Prove: 1+4+7+…+(3n-2) = 2n(3n-1)

1.83 Prove: $1^2+2^2+3^2+\ldots+n^2 = \dfrac{n(n+1)(2n+1)}{6}$

√

1.84 Prove: for n ≥ 3, we have $2^n \geq n^2$

$2^3 \geq 3^2$ 8 is not bigger than 9 stop

1.85 **Prove:** $\dfrac{1}{1\cdot 3}+\dfrac{1}{3\cdot 5}+\dfrac{1}{5\cdot 7}+\ldots+\dfrac{1}{(2n-1)(2n+1}=\dfrac{1}{2n+1}$

Do all the questions for chapter 1.