**Problem 1**

a. The algorithm adds each computed multiple to the next in the sequence. Example: 0\*0 then 0\*0 + 1\*1 etc

b. multiplication

c. n times

d. O(n)

e. I do not think there is a better algorithm for this. You will need to at least iterate n-1 times if you want to do both the multiplication and then the addition to the previous answer.

**Problem 2**

a. This algorithm checks to see if the indexes of a 2D array are equal to each other. If they are it returns true. If not it returns false.

b. key comparison

c. The basic operation is computed n-1 times due to the second for loop

d. O(n2)

e. . I do not think there is a more efficient solution as you will always need to traverse two lists, therefore it will always be O(n2).

**Problem 3**

a.

Q(1)=1

Q(2)=1=2(2)-1=4

Q(3)=2=2(3)-1=9

Answer-> Q(n)= n2

b.

Q(1)=0 //0 multiplications

Q(2)=Q(1) + 2 //2 multiplications

Q(3)=Q(2) + 3 //3 multiplications

Answer-> Q(n)=(n-1)

c.

Q(1)=0

Q(2)=Q(n-1)+3 //3 additions and subtractions

Q(3)=Q(2) + 6 //6 additions and subtractions

Answer-> Q(n)=3(n-1)

**Problem 4**

a. This program computes the lowest index of an array

b.

R(n)=R(n-2)+1

R(n)=R(n-2)+1 -> sublist (n-2)=R(n-4)+2

R(n-4)+2-> sublist R(n-6)+3

Answer-> R(n)=R(n-2)+1