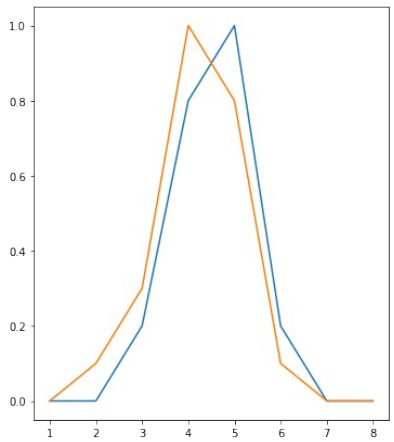
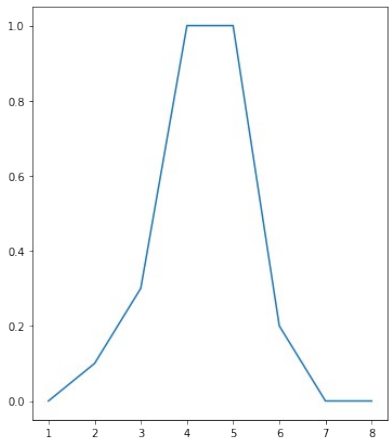
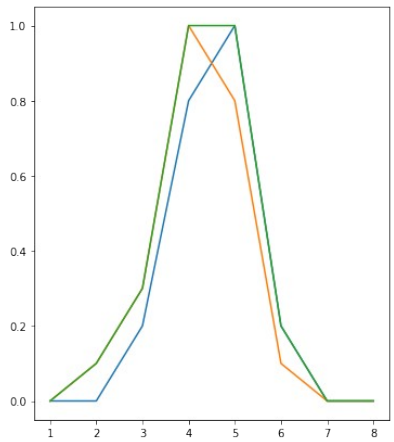
# CL3 Assignment 4

```
import matplotlib.pyplot as plt
plt.rcParams["figure.figsize"] = (20,7)

a =[[1,0.0],[2,0.0],[3,0.2],[4,0.8],[5,1],[6,0.2],[7,0.0],[8,0.0]]
b =[[1,0.0],[2,0.1],[3,0.3],[4,1],[5,0.5],[6,0.1],[7,0.0],[8,0.0]]

print()
def cheakset(a):
    r=0
    for i in range(len(a)):
        for j in range(i+1,len(a)):
            if a[i][0]==a[j][0]:
                r+=1
                break
    return r

def set_and_mf_of_set(a):
    p = cheakset(a)
    if p == 0:
        set1 =[]
        mfset=[]
        for i in range(len(a)):
            set1.append(a[i][0])
            mfset.append(a[i][1])
        return set1,mfset
    else:
        print("In Set at one element more then one MemberShip Value")

a = set_and_mf_of_set(a)



x =[[1,0.0],[2,0.0],[3,0.2],[4,0.8],[5,1],[6,0.2],[7,0.0],[8,0.0]]
y =[[1,0.0],[2,0.1],[3,0.3],[4,1],[5,0.8],[6,0.1],[7,0.0],[8,0]]
p,mfp = set_and_mf_of_set(x)
q,mfq = set_and_mf_of_set(y)

def Union(a,b):
    p = cheakset(a)
    q = cheakset(b)
    if p == 0 & q==0:
        union=[]
        if len(a) < len(b) :
            temp = a
            a = b
            b = temp
```

```
        for i in range (len(a)):
            for j in range(0,len(b)):
                if a[i][0] == b[j][0]:
                    if a[i][1] > b[j][1]:
                        union.append(a[i])

                    else:
                        union.append(b[j])
                else:
                    if len(union)==0:
                        union.append(a[i])
                    else:
                        p=0
                        for k in range(0,len(union)):
                            if union[k][0]==a[i][0]:
                                p+=1
                                if p==0:
                                    union.append(a[i])



        return union
    else:
        print("In Set at one element more then one MemberShip Value")


z=Union(y,x)
r,mfr = set_and_mf_of_set(z)

print(x)
print(y)
print("Union is",z)

plt.subplot(131)
plt.plot(p,mfp)
plt.plot(q,mfq)

plt.subplot(132)
plt.plot(r,mfr)

plt.subplot(133)

plt.plot(p,mfp)
plt.plot(q,mfq)
plt.plot(r,mfr)
```

```
[[1, 0.0], [2, 0.0], [3, 0.2], [4, 0.8], [5, 1], [6, 0.2], [7, 0.0],
[8, 0.0]]
[[1, 0.0], [2, 0.1], [3, 0.3], [4, 1], [5, 0.8], [6, 0.1], [7, 0.0],
[8, 0]]
```

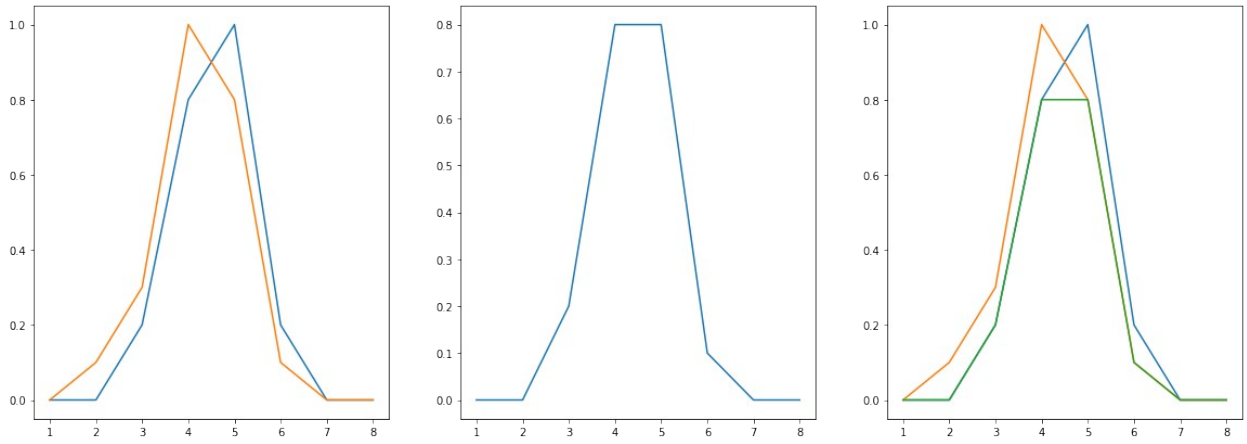
```
Union is [[1, 0.0], [2, 0.1], [3, 0.3], [4, 1], [5, 1], [6, 0.2], [7, 0.0], [8, 0.0]]

[<matplotlib.lines.Line2D at 0x1998e225e08>]
```

```
p,mfp = set_and_mf_of_set(x)
q,mfq = set_and_mf_of_set(y)

def Intersection(a,b):
    p = cheakset(a)
    q = cheakset(b)
    if p == 0 & q == 0:
        intersection=[]
        if len(a) < len(b) :
            temp = a
            a = b
            b = temp
        for i in range (len(a)):
            for j in range(0,len(b)):
                if a[i][0] == b[j][0]:
                    if a[i][1] < b[j][1]:
                        intersection.append(a[i])

                    else:
                        intersection.append(b[j])



        return intersection
    else:
        print("In Set at one element more then one MemberShip Value")


z=Intersection(y,x)
```

```
r,mfr = set_and_mf_of_set(z)

print(x)
print(y)
print("Intersection is",z)

plt.subplot(131)
plt.plot(p,mfp)
plt.plot(q,mfq)

plt.subplot(132)
plt.plot(r,mfr)

plt.subplot(133)

plt.plot(p,mfp)
plt.plot(q,mfq)
plt.plot(r,mfr)
```

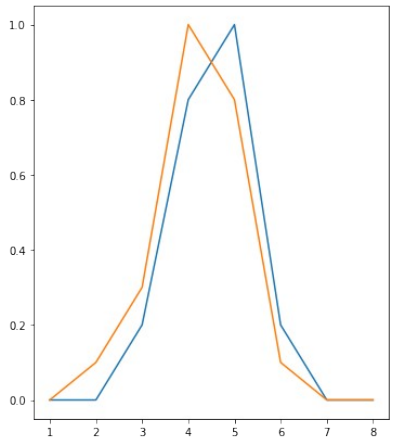
```
[[1, 0.0], [2, 0.0], [3, 0.2], [4, 0.8], [5, 1], [6, 0.2], [7, 0.0], [8, 0.0]]
[[1, 0.0], [2, 0.1], [3, 0.3], [4, 1], [5, 0.8], [6, 0.1], [7, 0.0], [8, 0]]
Intersection is [[1, 0.0], [2, 0.0], [3, 0.2], [4, 0.8], [5, 0.8], [6, 0.1], [7, 0.0], [8, 0.0]]

[<matplotlib.lines.Line2D at 0x1998eb75448>]
```

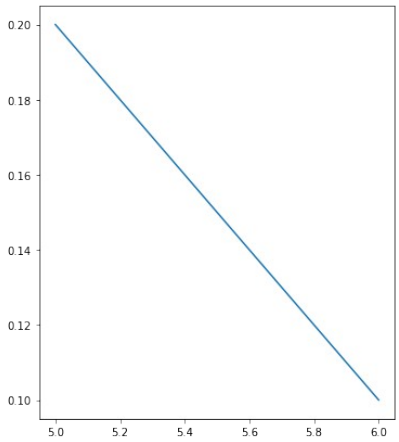


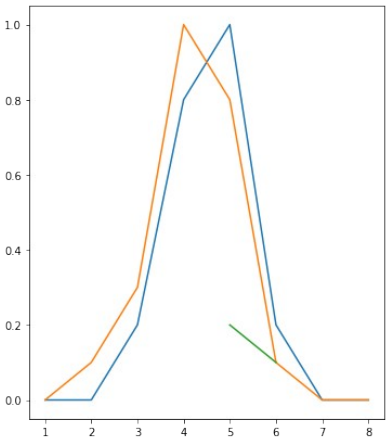
```
def Sub(a,b):
    p = cheakset(a)
    q = cheakset(b)
    if p == 0 & q == 0:
        sub=[]
        for i in range (len(a)):
            for j in range(0,len(b)):
                if a[i][0] == b[j][0]:
```

```
                    if a[i][1] > b[j][1]:
                        g = (a[i][0],a[i][1]-b[j][1])
                        sub.append(g)

#                     else:
#                         sub.append(b[j])


        return sub
    else:
        print("In Set at one element more then one MemberShip Value")

x =[[1,0.0],[2,0.0],[3,0.2],[4,0.8],[5,1],[6,0.2],[7,0.0],[8,0.0]]
y =[[1,0.0],[2,0.0],[3,0.3],[4,1],[5,0.8],[6,0.1],[7,0.0],[8,0.0]]

z= Sub(x,y)
print(z)
r,mfr = set_and_mf_of_set(z)

print(x)
print(y)
print("Sub is",z)

plt.subplot(131)
plt.plot(p,mfp)
plt.plot(q,mfq)

plt.subplot(132)
plt.plot(r,mfr)

plt.subplot(133)

plt.plot(p,mfp)
plt.plot(q,mfq)
plt.plot(r,mfr)
```

```
[(5, 0.19999999999999996), (6, 0.1)]
[[1, 0.0], [2, 0.0], [3, 0.2], [4, 0.8], [5, 1], [6, 0.2], [7, 0.0],
[8, 0.0]]
[[1, 0.0], [2, 0.0], [3, 0.3], [4, 1], [5, 0.8], [6, 0.1], [7, 0.0],
[8, 0.0]]
Sub is [(5, 0.19999999999999996), (6, 0.1)]

[<matplotlib.lines.Line2D at 0x1998ec81188>]
```








```
def Compliment(a):
    compliment=a
    print(a)
    for i in range(len(a)):
        compliment[i][1]=(1-compliment[i][1])
    print(a)
    return compliment

p,mfp = set_and_mf_of_set(x)

z = Compliment(x)
print(z)
r,mfr = set_and_mf_of_set(z)

j,mfj=set_and_mf_of_set(y)

g=Intersection(y,x)
h,mfh = set_and_mf_of_set(g)


plt.subplot(131)
plt.plot(p,mfp)
plt.plot(j,mfj)


plt.subplot(132)

plt.plot(r,mfr)
plt.plot(j,mfj)

plt.subplot(133)
plt.plot(j,mfj)

plt.plot(r,mfr)
plt.plot(h,mfh)
```

```
[[1, 0.0], [2, 0.0], [3, 0.2], [4, 0.8], [5, 1], [6, 0.2], [7, 0.0], [8, 0.0]]
[[1, 1.0], [2, 1.0], [3, 0.8], [4, 0.19999999999999996], [5, 0], [6, 0.8], [7, 1.0], [8, 1.0]]
[[1, 1.0], [2, 1.0], [3, 0.8], [4, 0.19999999999999996], [5, 0], [6, 0.8], [7, 1.0], [8, 1.0]]

[<matplotlib.lines.Line2D at 0x1998f199d88>]
```