① $A = \{(2,1),(3,0.5),(4,0.3),(5,0.2)\}$

DISCRETE X VALUES

$B = \{(2,0.5),(3,0.7),(4,0.2),(5,0.4)\}$

a) $A^c = \bar{A} = A\{X, 1-\mu_A(x)\} =$

$\{(2,0),(3,0.5),(4,0.7),(5,0.8)\}$

b) $A \cup B = \max(A(x,y), B(x,y)) =$

$\{(2,1),(3,0.7),(4,0.3),(5,0.4)\}$

c) $A \cap B = \min(A(x,y), B(x,y)) =$

$\{(2,0.5),(3,0.5),(4,0.2),(5,0.2)\}$

d) $A - B = A \cap B^c =$ $B^c = \{(2,0.5),(3,0.3),(4,0.8),(5,0.6)\}$

$\{(2,0.5),(3,0.3),(4,0.3),(5,0.2)\}$

e) $B - A = B \cap A^c = \{(2,0),(3,0.5),(4,0.2),(5,0.4)\}$

f) $\overline{A \cup B} = \{(2,0),(3,0.3),(4,0.7),(5,0.6)\}$

g) $\overline{A \cap B} = \{(2,0.5),(3,0.5),(4,0.8),(5,0.8)\}$

② a) CARTESIAN PRODUCT $A \times B$

$\mu_{A\times B}(D,S) = \min\{\mu_A(D), \mu_B(S)\}$

$A = \{(D_1,0.9),(D_2,0.5),(D_3,0.4),(D_4,0.2)\}$

$B = \{(S_1,0.7),(S_2,0.3),(S_3,0.8)\}$

$$A \times B = \begin{array}{c} \\ D_1 \\ D_2 \\ D_3 \\ D_4 \end{array} \begin{array}{c} \begin{array}{ccc} S_1 & S_2 & S_3 \end{array} \\ \begin{bmatrix} 0.1 & 0.3 & 0.8 \\ 0.1 & 0.3 & 0.5 \\ 0.1 & 0.3 & 0.4 \\ 0.1 & 0.4 & 0.2 \end{bmatrix} \end{array}$$

b) $A \cdot B = \max\{\min\{\mu_A(D), \mu_B(S)\}\}$

$$\max\left\{ \begin{array}{c} \\ D_1 \\ D_2 \\ D_3 \\ D_4 \end{array} \begin{array}{c} \begin{array}{ccc} S_1 & S_2 & S_3 \end{array} \\ \begin{bmatrix} 0.1 & 0.3 & 0.8 \\ 0.1 & 0.3 & 0.5 \\ 0.1 & 0.3 & 0.4 \\ 0.1 & 0.4 & 0.2 \end{bmatrix} \end{array} \right\} = \begin{bmatrix} 0.8 \\ 0.5 \\ 0.4 \\ 0.4 \end{bmatrix}$$

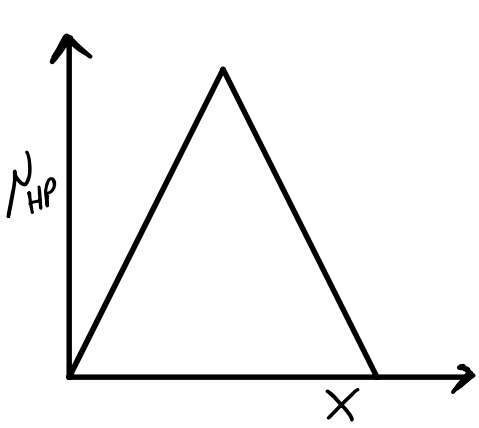
③ SEE MATLAB

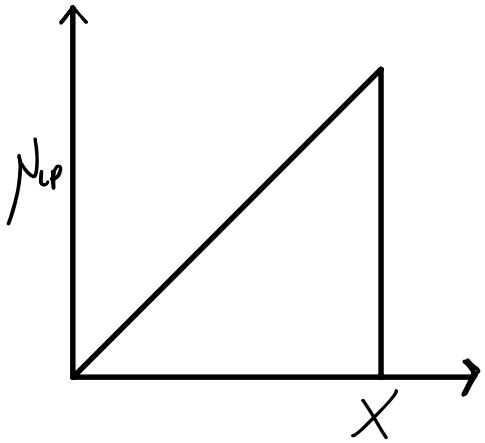
4

$X = \{0, 2, 4, 6, 8, 10\}$

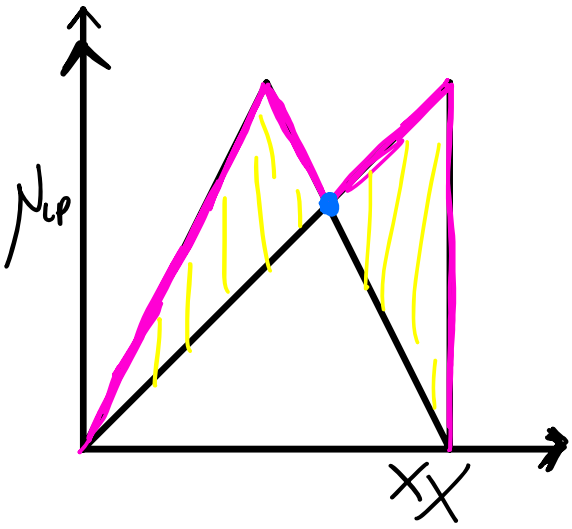
$\mu_{HP} = \{0, 0.2, 0.4, 0.6, 0.8, 1\}$

$\mu_{LP} = \{0, 0.4, 0.8, 0.8, 0.4, 0.2\}$

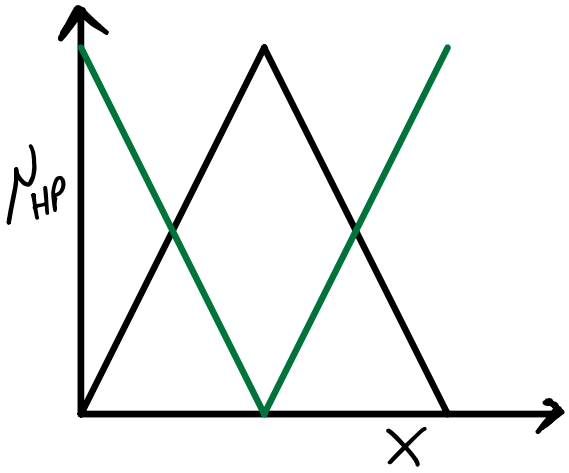


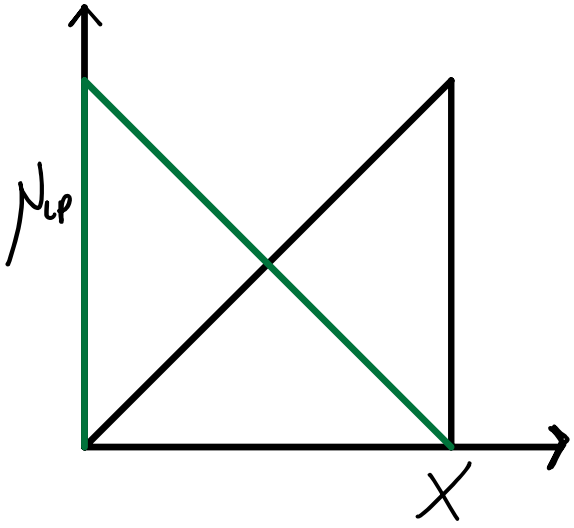


UNION: INTERSECTION: DIFFERENCE:



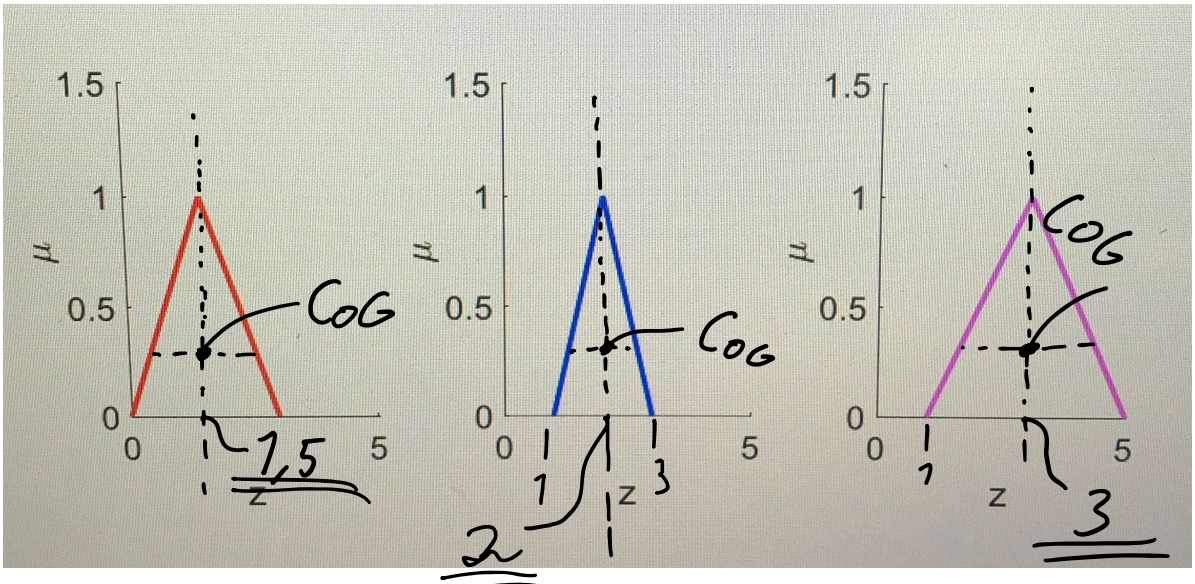
COMPLEMENT

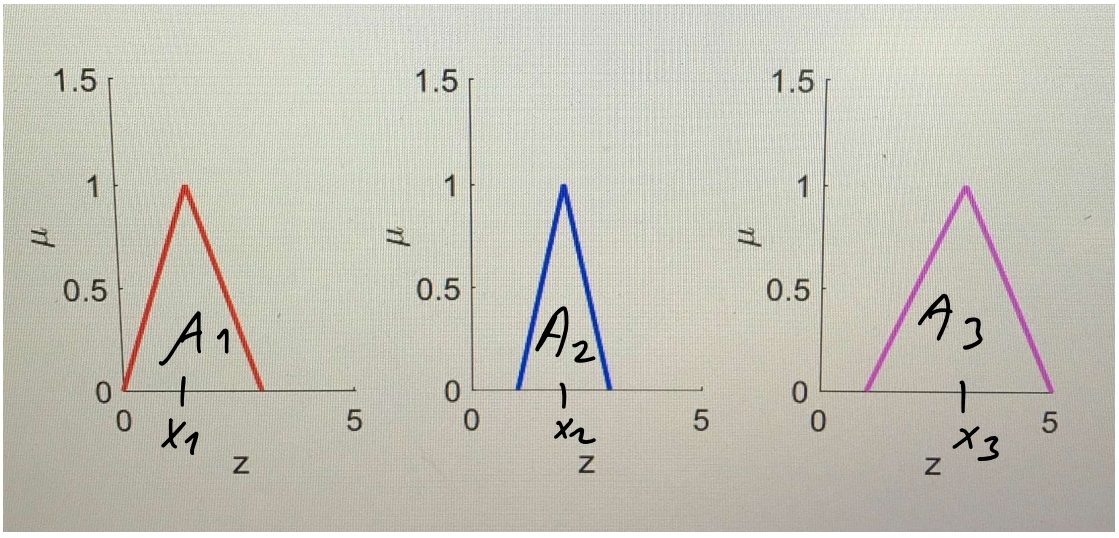




(5)

CENTRE OF GRAVITY :





X_3 = CENTRE OF LARGEST AREA

CENTRE OF SUM

$$Cos = \frac{A_1 x_1 + A_2 x_2 + A_3 x_3}{A_1 + A_2 + A_3}$$