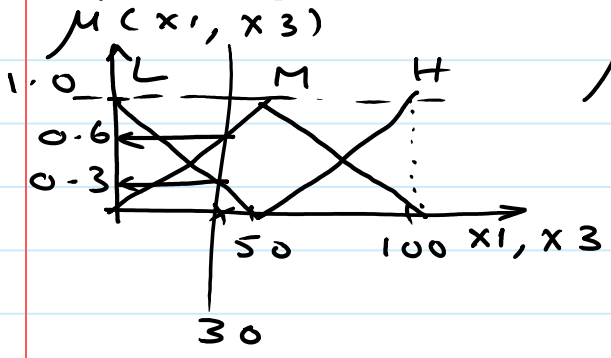
Ques 1 :

step 1 Fuzzification

$x1 = x3 = 30$

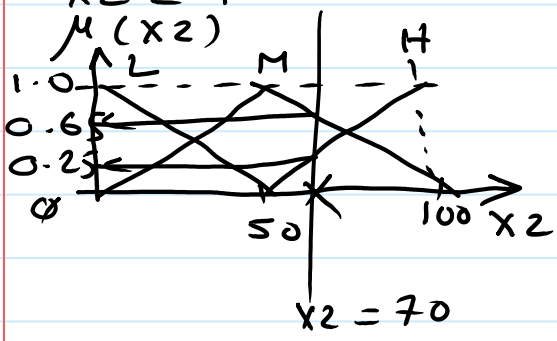


$\mu_L \begin{pmatrix} x1=30 \\ x3=30 \end{pmatrix} = 0.3$

$\mu_M \begin{pmatrix} x1=30 \\ x3=30 \end{pmatrix} = 0.6$

$\mu_H \begin{pmatrix} x1=30 \\ x3=30 \end{pmatrix} = \emptyset$

$x2 = 70$



$\mu_L(x3=70) = \emptyset$

$\mu_M(x3=70) = 0.65$

$\mu_H(x3=70) = 0.25$

step 2 Inference

DB1

R1 $w1 = \min(\mu_L(x1=30), \mu_L(x2=70))$
$= \min(0.3, \emptyset) = \emptyset$ L

R2 $w2 = \min(\mu_M(x1=30), \mu_H(x2=70))$
$= \min(0.6, 0.25) = 0.25$ H

DB2

R1' $w'1 = \min(\mu_L(x3=30), \mu_L(Y))$
$= \min(0.3, \emptyset) = \emptyset$ B

R2' $w'2 = \min(\mu_M(x3=70), \mu_H(Y))$

R_2 $w_2 = \min(\mu_M(x3=70), \mu_H(y))$

$= \min(0.65, 0.25) = 0.25\overline{M}$

Step 3 Defuzzification

$$\text{Predicted } D = \frac{\emptyset B + 0.25M}{\emptyset + 0.25}$$

$$= \frac{0.25M}{0.25} = M$$

Malignant!