ASSIGNMENT #6 (APriori in Higher Dimensions)

$\sum_{i=1}^{4} w_i = 1$

$(w_1, w_2, w_3, w_4) := (0.2, 0.5, 0.2, 0.1)$

$w_1 f_1(x_1) + w_2 f_2(x_1) + w_3 f_3(x_1) + w_4 f_4(x_1)$	0.56
$w_1 f_1(x_2) + w_2 f_2(x_2) + w_3 f_3(x_2) + w_4 f_4(x_2)$	0.37
$w_1 f_1(x_3) + w_2 f_2(x_3) + w_3 f_3(x_3) + w_4 f_4(x_3)$	0.24
$w_1 f_1(x_4) + w_2 f_2(x_4) + w_3 f_3(x_4) + w_4 f_4(x_4)$	0.245
$w_1 f_1(x_5) + w_2 f_2(x_5) + w_3 f_3(x_5) + w_4 f_4(x_5)$	0.62
$w_1 f_1(x_6) + w_2 f_2(x_6) + w_3 f_3(x_6) + w_4 f_4(x_6)$	0.185
$w_1 f_1(x_7) + w_2 f_2(x_7) + w_3 f_3(x_7) + w_4 f_4(x_7)$	0.78
$w_1 f_1(x_8) + w_2 f_2(x_8) + w_3 f_3(x_8) + w_4 f_4(x_8)$	0.83
$w_1 f_1(x_9) + w_2 f_2(x_9) + w_3 f_3(x_9) + w_4 f_4(x_9)$	0.81
$w_1 f_1(x_{10}) + w_2 f_2(x_{10}) + w_3 f_3(x_{10}) + w_4 f_4(x_{10})$	0.86

$\text{Min}(0.56, 0.37, 0.24, 0.245, 0.62, 0.185, 0.78, 0.83, 0.81, 0.86) = 0.185$

Optimal solution : x_6

$\epsilon_1 = \epsilon_3 = 0.5$

Solution	$\max(f_1)$ ≤ 0.5	$\min(f_2)$	$\min(f_3)$ ≤ 0.5	$\max(f_4)$	
x_1	0.5	0.4	1 ✗	0.6	✓
x_2	0.25	0.5	0.2	0.3	
x_3	0	0	0.7 ✗	1	✓
x_4	0.25	0.35	0	0.2	✓
x_5	0.5	0.54	1 ✗	0.5	✓
x_6	0	0.01	0.4	1	✓
x_7	1 ✗	1	0.4	0	
x_8	1 ✗	1	0.4	0.5	✓
x_9	1 ✗	1	0.4	0.3	
x_{10}	1 ✗	1	0.4	0.8	✓