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ECE 4720 HW 1

2.3)

a) Rmm = λ22 + (λ12 – λ22) ∫R1 p(**x**|ω2) d**x =** λ11 + (λ21 – λ11) ∫R2 p(**x**|ω1) d**x**

= 0 + (1 – 0) ∫R1 p(**x**|ω2) d**x +** 0 + (1 – 0) ∫R2 p(**x**|ω1) d**x**

= ∫R1 p(**x**|ω2) d**x +** ∫R2 p(**x**|ω1) d**x**

b)

2.5)

p(x|ωi) = T (µi, δi) = {[(δi - |x - µi |)/ δi2, for | x - µi | < δi], [0, otherwise]}

2.7)

p(x|ωi) = (1/πb) \* 1/(1+((x-ai)/b)2), i=1,2

E = P(error)

a)

ω2 but actually ω1

E1 = E(x|ω1) = ∫p(x|ω1) P(ω1)

P(ω1) = ½ (assumption)

=1/2 x∫inf (1/πb) \* 1/(1+((x-a2)/b)2) dx

b)

ω1 but actually ω2

E2= ∫p(x|ω2) P(ω2)

P(ω2) = ½ (assumption)

=1/2 -inf∫x (1/πb) \* 1/(1+((x-a1)/b)2) dx

c)

E1 + E2 = E

d)

E = .1 + 1/2π -inf∫x 1/(1+(x-1)2) dx

= .1 + 1/2π -inf∫x ((1+(x-1)2)-1 dx

e)