# ASSIGNMENT

**Given:**

* Classes: ω₁ = Spam, ω₂ = Not Spam
* Prior probabilities: P(ω₁) = 0.3, P(ω₂) = 0.7
* Likelihoods: P(x | ω₁) = 0.6, P(x | ω₂) = 0.05
* Feature x: presence of the word “winner”

**Step 1: Calculate the product of likelihood and prior for the “Spam” class**

**Step 2: Calculate the product of likelihood and prior for the “Not Spam” class**

**Step 3: Compare the two values**

* Spam: 0.18
* Not Spam: 0.035

Since 0.18 > 0.035, the Bayes decision rule says we should choose the class with the higher product.

**Step 4: Final classification**

An email containing the word ***“winner”*** should be classified as **Spam**.