

One criterion for obtaining an optimal rule is to minimize the probability of misclassification, a rule sometimes called ‘‘Bayes’ optimal rule.’’ It is important to know that the optimality of a Bayesian decision rule is independent of the form of the distribution. However, to apply the rule it is necessary to know the distribution. Since  $P(c_1|c_2)$  and  $P(c_2|c_1)$  are areas, they may be expressed as integrals.