Name: ———————-

Practice Quiz - 1
CS 591Q/791V - Pattern Recognition
Posted on: February 19, 2008

Note:
Univariate normal density: N(μ, σ^2) $= \frac{1}{\sqrt{2\pi}\sigma} e^{\left[-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2\right]}$.

1. [5 points] Briefly describe the following terms: (a) Reject Option; (b) Generative and Discriminative Models.

2. [8 points] Consider a two-class one-feature classification problem with the following Gaussian class-conditional densities:

$$p(x|C_1) \sim N(0, 1),$$
$$p(x|C_2) \sim N\left(\frac{1}{2}, 4\right).$$

   Assume $P(C_1) = P(C_2) = 1/2$. Derive the Bayes decision boundary.

3. [7 points] Consider a random variable x having the following distribution:

$$p(x|\theta) \quad = \theta^x (1-\theta)^{1-x}.$$

   Suppose that n samples ($x_1, x_2, \ldots, x_n$) are drawn independently according to $p(x|\theta)$. What is the maximum likelihood estimate of θ?
