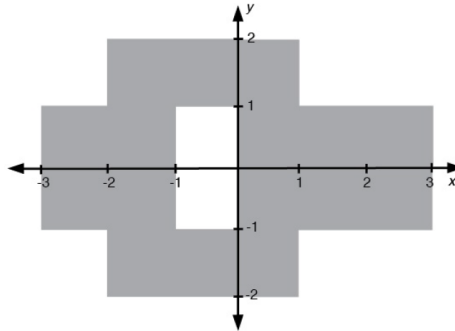


Name:

Student ID#:

Statistical Pattern Recognition (CE-725)
Department of Computer Engineering
Quiz #4 (Probabilistic Classification) - Spring 2011

1. Suppose x and y are random variables. Their joint density, depicted below, is constant in the shaded area and 0 elsewhere.



a. (2 points) Let w_1 be the case when $x < 0$, and w_2 be the case when $x > 0$. Determine the a priori probabilities of the two classes $P(w_1)$ and $P(w_2)$.

b. (2 Points) Let y be the observation from which we infer whether w_1 or w_2 happens. Find and sketch the likelihood functions, namely, the two conditional distributions $p(y|w_1)$ and $p(y|w_2)$.

c. (6 points) Find the posterior decision rule, and calculate the probability of error. Please note that there will be ambiguities at decision boundaries, but how you classify when y falls on the decision boundary doesn't affect the probability of error.