Machine Learning

Quiz 1

Student Name: _____

1. (1 point) Let $X \in \mathbb{R}$ be a continuous random variable with realizations x, and let the variable be distributed according to $p(x)$. Give two necessary conditions on $p(x)$ for it to be a proper probability density function (pdf):

2. (1 point) Let Y be another continuous random variable with realizations y, and be $p(x,y)$ their joint pdf. How does one obtain the marginal $p(x)$ from the joint $p(x,y)$?

$$p(x) =$$

3. (1 point) Let $p(x \mid y)$ be the conditional pdf of 'x given y'. How does it relate to the joint and marginal distributions?

$$p(x \mid y) =$$

4. (1 point) How does the conditional pdf $p(x \mid y)$ relate to its counterpart $p(y \mid x)$?

$$p(x \mid y) =$$