## ECEn 370 <br> Quiz 7

Friday, February 26, 2010.

The random variables $X$ and $Y$ have a joint distribution given by:


$$
f_{X, Y}(x, y)= \begin{cases}c, & \text { if }(x, y) \text { is in shaded region } \\ 0, & \text { otherwise }\end{cases}
$$

1. What is the value of $c$ that makes this pdf legitimate?
2. What is the probability of the event $\{X \leq Y\}$ ?
3. What is the pdf associated with $f_{X \mid Y}\left(x \left\lvert\, \frac{3}{2}\right.\right)$ ?
4. What is the pdf associated with $f_{Y \mid X}\left(y \left\lvert\, \frac{5}{2}\right.\right)$ ?
5. Suppose you have the event $\{Y \geq 1\}$. What is the joint PDF associated with $f_{X, Y \mid A}(x, y)$ ?
6. Find $\mathrm{E}[X]$.
7. Find $\mathrm{E}[X \mid A]$.
