

Names _____

Let

$$f(x, y) = \begin{cases} 0.1e^{-(0.5x+0.2y)} & \text{if } x \geq 0, y \geq 0 \\ 0 & \text{otherwise} \end{cases} .$$

1. Verify that $f(x, y)$ is a joint density function by showing that the integral of $f(x, y)$ over the entire domain is 1. This means that there is a 100% chance (X, Y) lie in their domain.

2. Find $P(X \leq 2, Y \leq 4)$ and $P(Y \geq 1)$. The latter is the probability that $Y \geq 1$ and X lies in the domain.

3. Find the expected values of X and Y .