**Question 1.** The random variable X and Y have the following joint probability density

𝑓𝑋𝑌(𝑥, 𝑦) = { 𝑒−𝑥−𝑦 0 < 𝑥 < ∞,0 < 𝑦 < ∞

0 𝑒𝑙𝑠𝑒𝑤ℎ𝑒𝑟𝑒

What is 𝑃(𝑋 < 𝑌) ?

**Answer:**

**=**

=

P(X<Y) will follow distribution of

**Note: The distribution graph is provided in python script**