

2D LoTUS

1. Let X, Y be IID $\text{Exp}(1)$ random variables. Find $\mathbb{E}[|X - Y|]$ (i.e. the expected value of the absolute value of the difference) using 2D LoTUS.
2. Now let X, Y be IID $\text{Exp}(\lambda)$. Without doing any extra integration and using properties of Exponentials, what is $\mathbb{E}[|X - Y|]$?