1. Calculate the expectation for the uniform distribution on $[a, b]$.

Solution

$$\Rightarrow E(X) = \int_a^b \frac{x}{b-a} dx = \frac{1}{b-a}\left[\frac{x^2}{2}\right], from, a- > b \Rightarrow \frac{b+a}{2} = \frac{1}{2}(b+a)$$

2. Calculate the distribution function for the exponential distribution with parameter λ

Solution

$\Rightarrow$ From $f'(x) = -e^{-\Lambda x}$,diff wrt x we have, f(x) $= -\Lambda(-e^{-\Lambda x})$

$\Rightarrow$ Therefore, $f(x) = \Lambda e^{-\Lambda x}$,which is the probability distribution function for exponential distribution