Answer on Question #48729 – Math – Statistics and Probability

If $F_X\ (x) = [1 - e^{-\alpha x}]U(x - c)$. Find $f_X\ (x\ )$.

Solution

$$U(x-c) = \begin{cases} 1, if\ x > c \\ 0, if\ x < c \end{cases}$$

$$f_X\ (x\ ) = \frac{\partial F_X(x)}{\partial x} = \frac{d}{dx}[1 - e^{-\alpha x}] \cdot U(x - c) = -\alpha \cdot (-e^{-\alpha x})U(x - c) = (\alpha e^{-\alpha x})U(x - c).$$