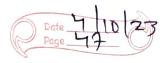
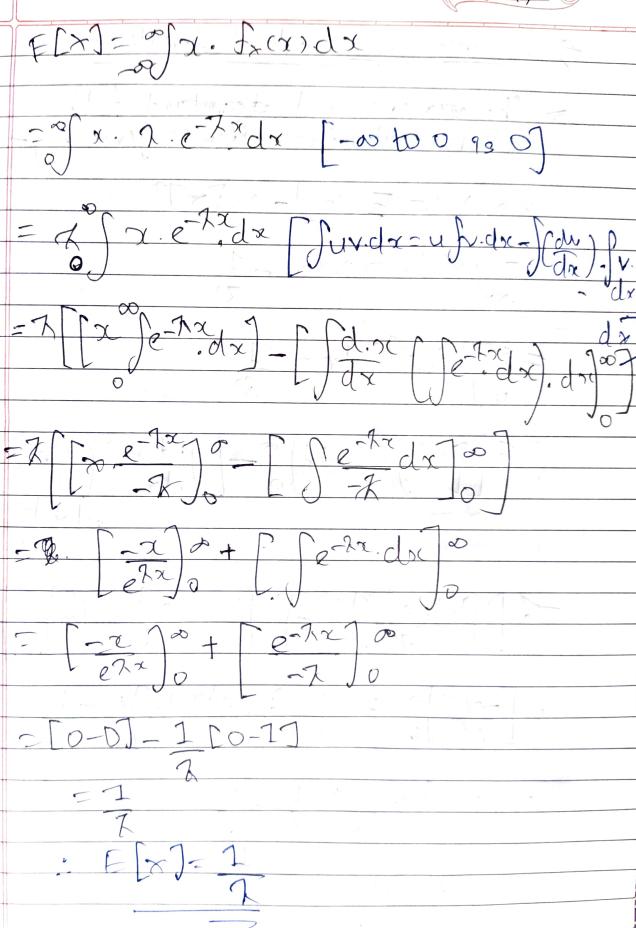
1.29. Expettation of Exponential Distribution; The PDF 19 ces Allows -> fo(x)= /1.e-12; x ∈ [0,00) => CDF= P(xst)=F(t)=1-ext => Expected values. Samply multiply the probability distribution function with x and integrate a over all gossible value osupports.







-> Variance and Standard Liviation; > The variance and stangetard of the exponential distribution is given by- $= \int x^2 \int x (x) dx - \frac{1}{x^2}$ = 10 3. c 2x dx - 1 = 7 [x2 [= 2 dx] = [d a 3/2 [] Trendo Torreta $\begin{bmatrix} -\chi^2 / \omega + 2 \\ \rho / \chi / \omega \end{bmatrix} + \frac{1}{2} \begin{bmatrix} \chi \cdot e^{-\frac{1}{2}\chi} / \chi / \omega - 1 \\ \chi \cdot e^{-\frac{1}{2}\chi} / \chi / \omega \end{bmatrix} = \frac{1}{2}$ · Var [x]= 72



- The standard deviation of the distribution:-5= V Var [x7] = 1 =] EXAMPLE: Let & denote the time Letwein detections of a particle with a crician Counter and assume that & has on an exponential distribution with F[x] = 1.4 Menutes. What is the probability that We ditect a particle within 50 seconds of starting the counter? => E[x7=1=2.4 minutes within 30 secondo, : += 30 sec= 0.5 nenute : P(x20.5)- 1-e-xt = 1-e-(t.4)(0-5) 7 1-0.699 P(K60.5)= 0.3003



GATE-2027 = The latetime at a component of a certain type is a random rassable whose probability density functions is exponentially distributed with garanch. 2! For a randomly packed component of the type, The probability that its lifetime exceeds the expected lefetime Crounded to adecimal places is -> Expetted lifetime = E[x]. Parameter is only one; and 4 = 7-2 & [x]=2-1=0.5 P(x>0.5) =1-P(x60.8) = e 0.592 = e 1 (A.DO.32 (B.) 0.25 (C.)0.50 CD.) 0.18