



Studies of a single-makine-tool system showed that the time, the machine operates before the broaking down is exponentially distributed with a mean if find the probability that the machine operates for a) at least 12 hrs before the breaking down b) at least 14 has but fail before 20 has the probability that it will last another 4 hos iii) IP the machine has already been operating this find the probability that it will another 4 hos. Let X be life in hours of a machine it Mean = 1/1 = 10 i.e. 1/10X~ Exp ()=0.1) pdf is f(n) = 0.1 e - 0.120, x 20 cdf is $F(x=x) = p(x \le x) = 1 - e^{-0.1\pi}$, $0 \le n$ so, $p(x \ge n) = e^{-0.1\pi}$ a) p (the machine operates for at least 12 has before the bornking down) = p(x7,12) = e-01(12) = 0.301194

8019.

b) P(the machine operates for atteast 14 hrs but Pais before 20 has)

= p(14 = n < 20) = . F(20) - F(14)

- 21-e-0-1 (a0) }- \ 1-e-0-1 (14) }

who have the tall all the sales of the

if If the machine has already been operating 8 has the probability that it will part onother

Using Memoryless property,

Required probability is p(x>123/28) = p(2274)

= e-01(4) = 0.6703

If the machine has already been greating 6 has the probability that it will last another 4 has

Using Memoryless property, Required probability is p (2014 to /2006) = p(2024)

= -0.1(4) = 0.6703

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4/02/21

Normal Distribution

 $d(n) = \frac{1}{e^{\sqrt{(n-m)/e}}}, -\infty < x < \infty$

where, - 00 < 1 < 000 0 < 62 < 00

0] Example: (Type I)

IF > ~ N (0,1)

Find P(0<2<0.95), P(2>0.95), P(2 < < -0.95)

P(121 x 0.95)

8019:- P(0<2<0.95) = 0.3289

P(2 < 0.95) = 0.5 + 0328 0.3289

1 (2 > 0.95) = 0.5 - 0.3289

P(2 <-0.95) = 0.5-0.3289

P(121 < 0.95) = 2(0.3289)

onat is the value of the constant c if

i) p(0<2<1) = 0.2091

0:61 = (0:6)

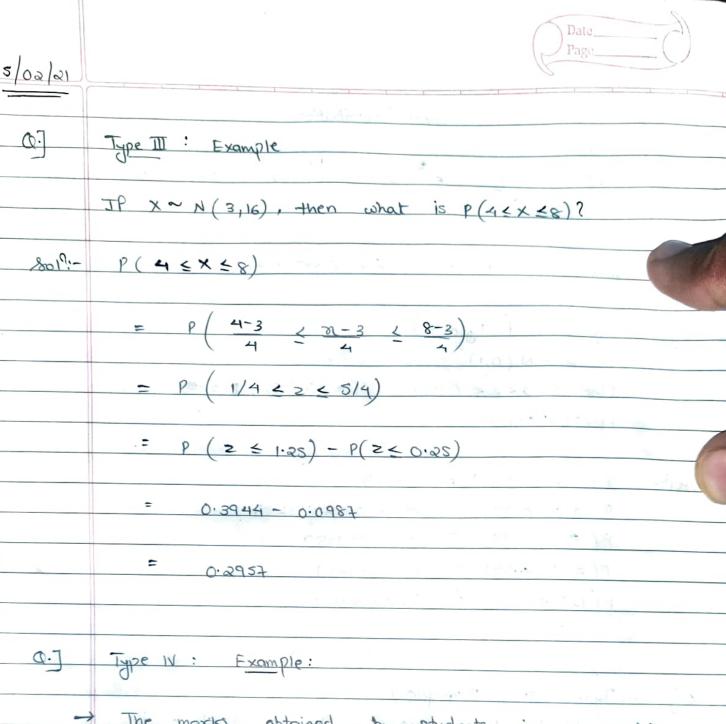
ii) p(2<0) = 0.7091 = 0.8+ 0.2291

· c= 0.61

p(2<c) = 0.2291 $\therefore c = -0.74$ (continue - on 5/02/24)

iv) p(27c) = 0.2291

: C= 0.74



examination follow a normal distribution with a mean 70 and standard eleviation 5. It look students appeared at an examination. Calculate the number

of students soming more than 75 months

8019:- RV. X = marks obtained by students

= 0.5 - 0.3413

= 0.1587

The number of students storing more than 98 marks = 1000 (0.1881) = F8 (S8:7)



The monthly salary of a company XYZ were found to be normally distributed with mean Rs. 3000 and SD Rs 250, what should be the minimum salary of the worker in a company XY2 so that the probability that he belongs to top solo. 801:- S.N.V. 2 = 20 - M = 2000 = 2000 = 2000we have to find value of 21 for a given probability 0.0s p (2>21) = 0:05 P(0 <2 < Z1) = 0.5 - 0.05 = 0.45 2-3000 - 1.64 2 = 3000 + 250 (1.64) = Rg. 3410