RESOLUÇÃO do 4º TESTE 11º 41

1) TOTAL: 200 $X =$ "... 2 ou 3 ou 4..." → TOTAL: 70 RESTANTES: 130 "1"

$P(X=0) = P(1Ex, 1Ex) = \frac{130}{200} \times \frac{129}{199} = 0,42$

$P(X=1) = P("2 ou + Ex", "1Ex") + P("1Ex", "2 ou + Ex") =$

$= \frac{130}{200} \times \frac{70}{199} \times 2 = 0,46$

$P(X=2) = \frac{70}{200} \times \frac{69}{199} = 0,12$

$X = \begin{pmatrix} 0 & 1 & 2 \\ 0,42 & 0,46 & 0,12 \end{pmatrix}$

$E(x) = 0 \times 0,42 + 1 \times 0,46 + 2 \times 0,12 = 0,7$

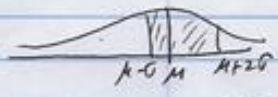
$VAR(x) = (0-0,7)^2 \times 0,42 + (1-0,7)^2 \times 0,46 + (2-0,7)^2 \times 0,12 = 0,45$

2) $p = 0,4^4 \times 0,6 = 0,01536 \simeq 0,015$

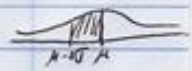
3) $X \sim N(1; 0.2)$

3.1) $P(\frac{4}{5} < X < \frac{7}{5}) = P(0,8 < X < 1,4) = P(\mu - \sigma; \mu + 2\sigma) =$

$= \frac{68,27\%}{2} + \frac{95,45\%}{2} = 81,86\%$



3.2) $P(\frac{3}{5} < X < 1) = P(0,6 < X < 1) = P(\mu - 2\sigma < X < \mu) =$



$= \frac{95,45\%}{2} = 47,725\% = 0,47725$

$p = 0,47725 \quad \bar{p} = 0,52275$

$p = 0,47725 \times 0,47725 \times 0,52275 \times 3 = 35,72\%$

4) $P(X > M+\sigma) = 50\% - \frac{68,27\%}{2} = 15,865\%$ RESPOSTA: D

5)

$P(a<X<b) =$

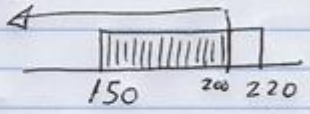
$= 0,18 + (0,75 - 0,5) =$

$= 0,18 + 0,25 = 0,43$

6) Por mês: $\frac{36}{12} = 3 \quad \lambda = 3$

$P(X=2) = e^{-3} \times \frac{3^2}{2!} \approx 0,224$

7) $P(X<200) =$



$= P(150<X<200) = \frac{200-150}{220-150} = 0,714$

8) $P(20<X<25) = e^{-0,05 \times 20} - e^{-0,05 \times 25} \approx 0,081$

$\lambda = 0,05$

9) $P(1,5<U<2,5) = \Phi(2,5) - \Phi(1,5) =$

$= 0,9938 - 0,9332 = 0,0606$ RESPOSTA: D

10) $X \sim N(15,2)$

$$P(13,2 < X < 17) = P\left(\frac{13,2-15}{2} < U < \frac{17-15}{2}\right) =$$

$$= P(-0,9 < U < 1) = \Phi(1) - [1 - \Phi(0,9)] =$$

$$= 0,8413 - (1 - 0,8159) = 0,6572$$

11) $P(X < 14) = 0,6103$ $\quad \mu = \sigma + 9,84$

$$P\left(\frac{X-\mu}{\sigma} < \frac{14-\mu}{\sigma}\right) = 0,6103 \quad \text{TABELA...}$$

$$\frac{14-\mu}{\sigma} = 0,28 \Leftrightarrow 14 - \mu = 0,28\sigma$$

$$\Leftrightarrow 14 - (\sigma + 9,84) = 0,28\sigma \Leftrightarrow 14 - 9,84 = 0,28\sigma + \sigma$$

$$\Leftrightarrow 14 - 9,84 = 1,28\sigma \Leftrightarrow \sigma = \frac{14-9,84}{1,28} \Leftrightarrow \boxed{\sigma = 3,25}$$

$$\mu = 3,25 + 9,84 \qquad \boxed{\mu = 13,09}$$