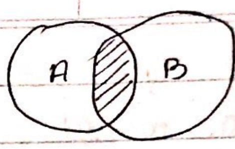
PROBABILIDAD Y ESTADISTICA

UNIDAD II

Aporte de N.C. DARK.. ANGEL...

1

$P_A = 0{,}2 \qquad P_B = 0{,}3$



a $= P_A \cdot P_B = 0{,}06$

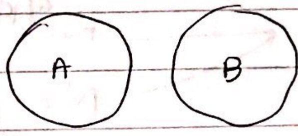
b $= P_A + P_B - P_{A\cap B} = 0{,}44$

c $= 1 - P_{A\cup B} = 1 - 0{,}44 = 0{,}56$

2

$P_A = 0{,}15 \qquad P_B = 0{,}31$

A → mutuamente excluyentes



a) $P(A\cup B) = P_A + P_B - \cancel{P_{A\cap B}}$

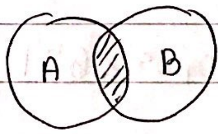
$= 0{,}15 + 0{,}31 = 0{,}46$

no hay interacción

b) $P(A\cap B) = 0$

c) $P(A/B) = \dfrac{P(A\cap B)}{P(B)} = \dfrac{0}{0{,}31} = 0$

B → independientes



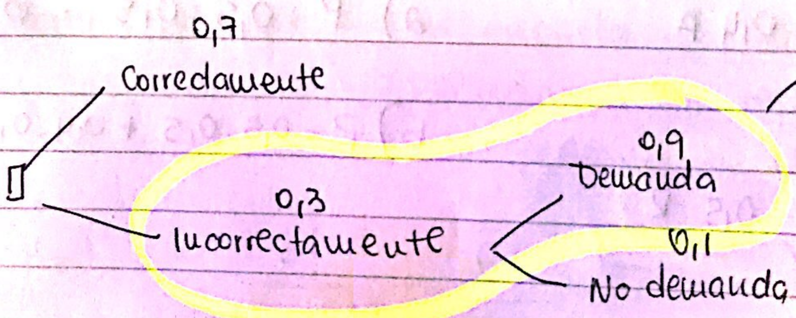
a) $P(A\cup B) = P_A + P_B - P_{A\cap B}$

$= 0{,}15 + 0{,}31 - 0{,}0465 = 0{,}4135$

b) $P(A\cap B) = P_A \cdot P_B = 0{,}0465$

c) $P(A/B) = \dfrac{P(A\cap B)}{P(B)} = 0{,}15$

3



→ Diagnostico incorrecto y lo demanden

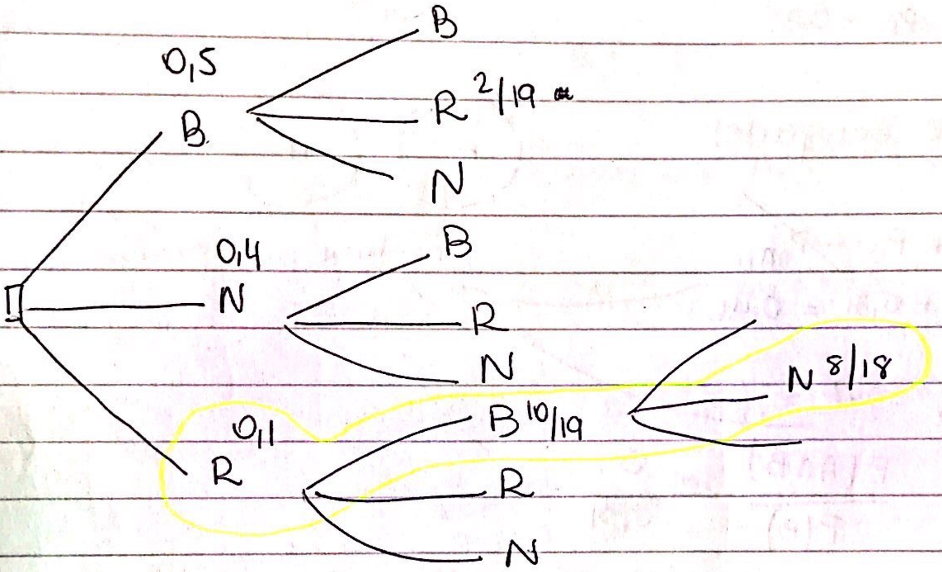
$P = 0{,}3 \cdot 0{,}9 = 0{,}27$

4

a) $\frac{2 \text{ b. rojas}}{20 \text{ b. totales}} = 0{,}1$

b) $\frac{8 \text{ b. negras}}{20 \text{ b. totales}} = 0{,}4$

c)

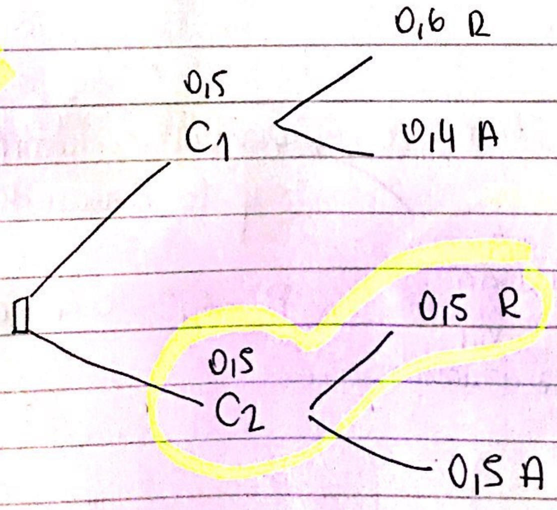


$P = 0{,}5 \cdot \frac{2}{19} = 0{,}052631$

d) $P = 0{,}4 \cdot 0{,}4 = 0{,}16$

e) $P = 0{,}1 \cdot 10/19 \cdot 8/18 = 0{,}02339$.

5

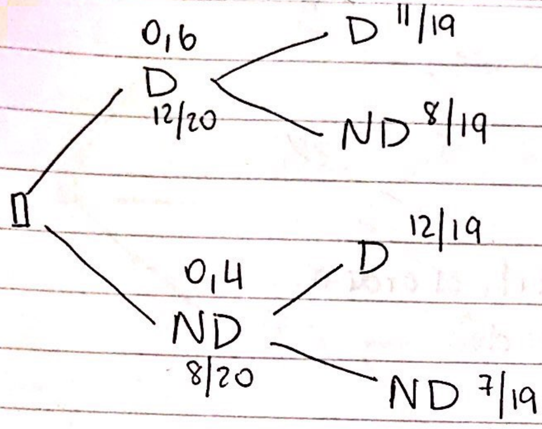


a) $P = 0{,}5 \cdot 0{,}5 = 0{,}25$

b) $P = 0{,}5 \cdot 0{,}5 + 0{,}4 \cdot 0{,}5 = 0{,}45$

20 Art. 12 D 8 ND

6

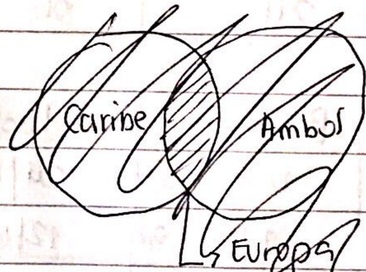


a) $P = 0{,}6 \cdot 11/19 = 33/95 = 0{,}3473$

b) $P = 0{,}4 \cdot 7/19 = 14/95 = 0{,}1473$

c) $P = (0{,}4 \cdot 12/19) + (0{,}6 \cdot 8/19) = 48/95 = 0{,}5052$

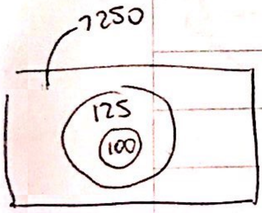
7 a) $P_E = \underbrace{125}_{\text{favorables}} / \underbrace{250}_{\text{posibles}} = 0{,}5$



b) $P_{Ambos} = 100/250 = 0{,}4$

c) $\cancel{1 - P(C \cup E)}$

$\cancel{1 - P_C - P_E +}$



$1 - P_E = 0{,}5.$

No entendi bien, el profe dijo que la intersección son los que fueron a europa

8 Formas distintas → me importa el orden.
↳ permutación sin repetición xq' no puedo dos personas en un asiento.

a)

$${}_6P_6 = \frac{6!}{(6-6)!} = \frac{6!}{1} = 720$$

Scanned with CamScanner

(b) Como armo grupos → no me importa el orden
→ combinaciones sin repetición

$$_{10}C_6 = \frac{10!}{6!(4!)} = 210$$

(c) formas distintas → me importa el orden
→ permutación

$$_{10}P_6 = \frac{10!}{4!} = 151200 .$$

(a)

	Basquet	Futbol	TOTAL
H	12	24	36
M	12	12	24
TOTAL	24	36	60

	Basquet	Futbol	
H	12/60 = 0,2	24/60 = 0,4	0,6
M	12/60 = 0,2	12/60 = 0,2	0,4
	0,4	0,6	1

a) Mujer o Futbolista

$P_m = 0{,}4 \quad P_F = 0{,}6 \quad P_{M y F} = 0{,}2$

$P = 0{,}4 + 0{,}6 - 0{,}2 = 0{,}8$

b) Basquet y Hombre

$P = 0{,}2$

c) Futb y Basq → mut. excluyente

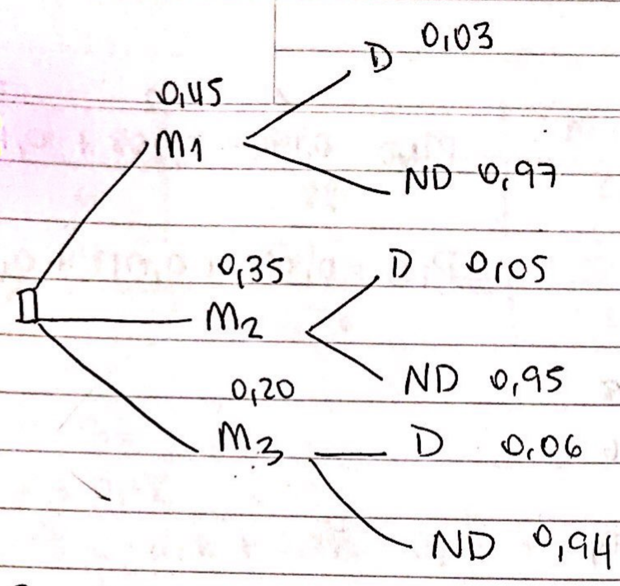
$P = 0$

d) Sabiendo que es hombre, que sea futb.

$P_{FyH} = 0{,}4 \quad P_F = 0{,}6 \quad P = \frac{0{,}4}{0{,}6} = 0{,}6667$

Scanned with CamScanner

10

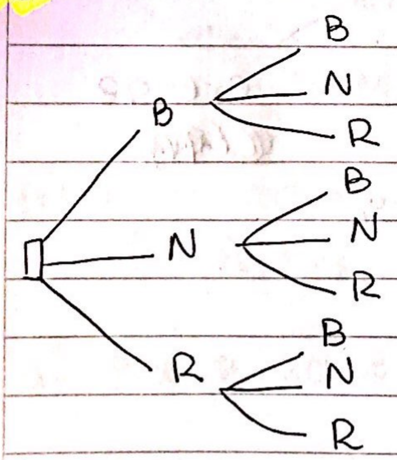


a) $P = 0{,}45 \cdot 0{,}03 = 0{,}0135$

b) $P = 0{,}03 \cdot 0{,}45 + 0{,}05 \cdot 0{,}35 + 0{,}06 \cdot 0{,}20 = 0{,}043$

c) $P = \dfrac{0{,}06 \times 0{,}20}{0{,}043} = 0{,}2790$

11 15 blancas 30 negras 5 rojas.

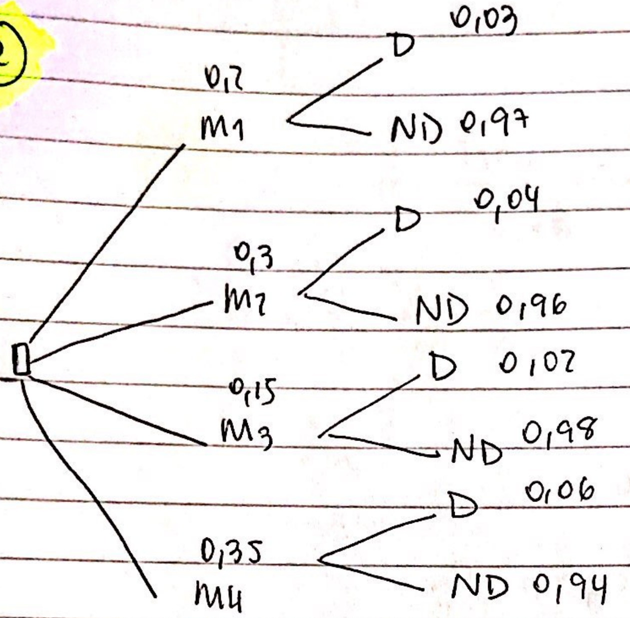


a) $P = \dfrac{5 \text{ rojas}}{50 \text{ tot}} = 0{,}1$ b) $P = \dfrac{30 \text{ negras}}{50 \text{ total}} = 0{,}6$

c) $P = \dfrac{15}{50} \cdot \dfrac{5}{49} = 0{,}03061$ d) $P = \dfrac{30}{50} \cdot \dfrac{30}{50} = 0{,}36$

e) $P = \dfrac{5}{50} \cdot \dfrac{15}{50} \cdot \dfrac{30}{50} = 0{,}018$.

(12)



1 2 3 4

$P_{TND} = 0{,}194 + 0{,}288 + 0{,}147 + 0{,}329$

$P_{TD} = 0{,}006 + 0{,}012 + 0{,}003 + 0{,}021$

(a) $P = 0{,}2 \cdot 0{,}03 = 0{,}006$

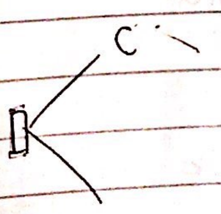
(b) $P = \dfrac{0{,}3 \cdot 0{,}04}{0{,}03 \times 0{,}2 + 0{,}04 \times 0{,}3 + 0{,}02 \times 0{,}15 + 0{,}06 \times 0{,}35} = 0{,}2857$

(c) $P = 0{,}04 \cdot 0{,}3 = 0{,}012$

(d) $P = 0{,}98 \cdot 0{,}15 = 0{,}147$

(e) $P = \dfrac{0{,}97 \cdot 0{,}2 + 0{,}98 \cdot 0{,}15 + 0{,}94 \cdot 0{,}35}{0{,}97 \cdot 0{,}2 + 0{,}96 \cdot 0{,}3 + 0{,}98 \cdot 0{,}15 + 0{,}94 \cdot 0{,}35} = 0{,}6993$

(13) 5 Preg < V F



~~b) P = 0,5^5 = 0,03125~~

$b(2, 5, 0{,}5) = C^5_2 \cdot 0{,}5^2 \cdot 0{,}5^3 = \left(\frac{5!}{2!3!}\right) \cdot 0{,}5^2 \cdot 0{,}5^3$

a) $P = 0{,}5^5 = 0{,}03125$

16

	Treu	No treu	
H	0,16	0,24	0,4
M	0,12	0,48	0,6
	0,28	0,72	1

a) $P = 0{,}6$

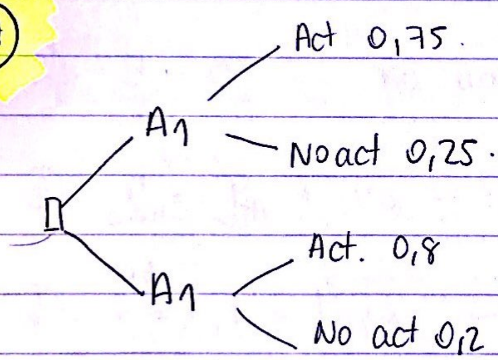
b) $P = 0{,}12$

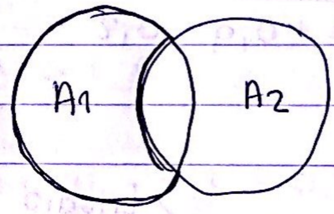
c) $P = 0{,}6 + 0{,}28 - 0{,}12 = 0{,}76$

d) $P = 0{,}28$

e) $P = \dfrac{0{,}16}{0{,}28} = 0{,}5714$

17

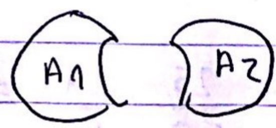




b) Que se active al menos 1

$P = P_{A_1} + P_{A_2} - P_{A_1 \cap A_2} = 0{,}75 + 0{,}8 - 0{,}75 \cdot 0{,}8 = 0{,}95$

a) Que se active solo 1

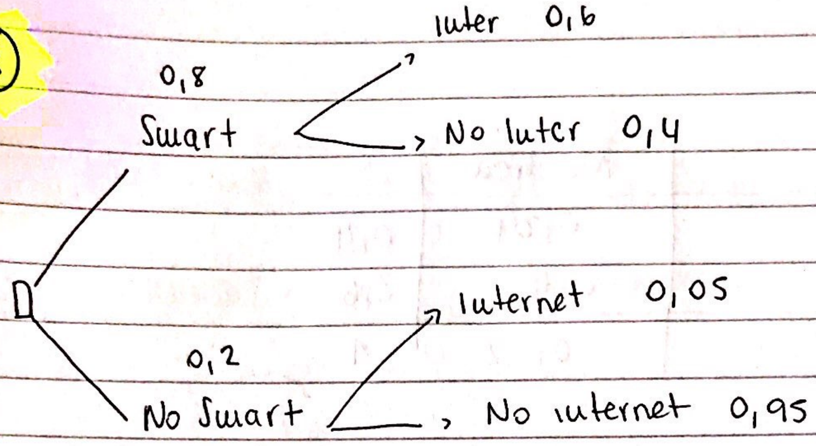


$P = P_{A_1} + P_{A_2} - 2 \cdot P_{A_1 \cap A_2} = 0{,}35$

c) Que se activen las dos

$P = P_{A \cap B} = 0{,}75 \cdot 0{,}8 = 0{,}6$

(18)

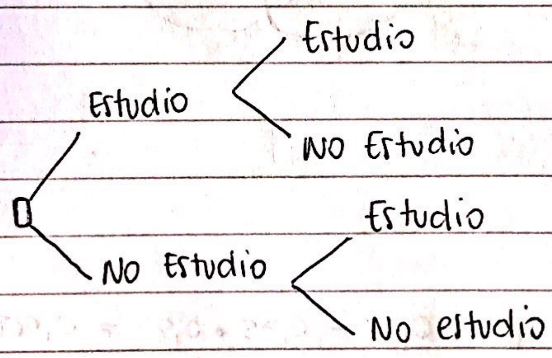


a) $P = 0{,}6 \cdot 0{,}8 + 0{,}2 \cdot 0{,}05 = 0{,}49$

b) $P = 0{,}2 \cdot 0{,}05 = 0{,}01$

c) $P = \dfrac{0{,}4 \cdot 0{,}8}{0{,}4 \cdot 08 + 0{,}95 \cdot 0{,}2} = 0{,}6274$

(19)



50 − 100
− 60

a) $P = \dfrac{25}{50} \cdot \dfrac{24}{49} = 0{,}2449$

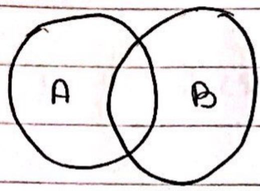
b) $P = \dfrac{30}{50} \cdot \dfrac{29}{49} = 0{,}3551$

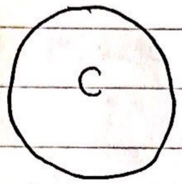
c) $P = 1 - \dfrac{40}{50} \cdot \dfrac{39}{49} = 0{,}3632$

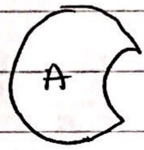
20) $P(A) = 0{,}2$ $P(B) = 0{,}4$ $P(C) = 0{,}3$

$P(A \cap B) = 0{,}1$ $P(A \cap B)C = \emptyset$ no existe

↳ mutuamente excluyente con A y B







a) $P = P_A - P_{A \cap B} = 0{,}2 - 0{,}1 = 0{,}1$

b) $P = 0$ no hay interseccion con C.

c) $P = P_A + P_B - P_{A \cap B} = 0{,}2 + 0{,}4 - 0{,}1 = 0{,}5$

d) $P = 0{,}1 = P_{A \cap B}$ ⟶ ahi ocurren dos sucesos

e) $P = 0{,}1$ ⟶ " " " "

f) $P = 1$ no existe en ningun lugar mas de dos sucesos.

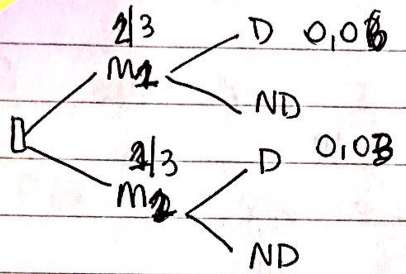
g) $P = P_A + P_B - P_{A \cap B} + P_C = 0{,}8$

h) $P = 1 - 0{,}8 = 0{,}2$

1)

b) $15 \cdot 0{,}25 = 3{,}75$

2) Primero debo calcular P



$P = 0{,}06 \cdot \frac{2}{3} + 0{,}03 \cdot \frac{1}{3}$

$\boxed{P = 0{,}05}$ Prob de defectuosos de las dos maquinas.

$n = 10$ muestras $\quad x = 2 \quad$ utilizo binomial

a) $b(2, 10, 0{,}05) = 0{,}0746$ → puntual.

b) Al menos 2 defectuosos } no incluye a 2, solo 0 y 1.

$P = 1 - B(1, 10, 0{,}05) = 1 - 0{,}9139 = 0{,}0861$

3) Hipergeometrica $\mu = 10$

$$h(4, 4, 7, 10) = \frac{\frac{7!}{4!\,3!} \cdot \frac{3!}{2!}}{\frac{10!}{4!\,6!}} =$$

x n a N

0
1
2
3
4
6
7
8

$$\frac{{}_aC_x \cdot {}_{N-a}C_{n-x}}{{}_NC_n} = \frac{{}_7C_4 \cdot {}_3C_0}{{}_{10}C_4} = \frac{\frac{7!}{4!\,3!} \cdot \cancel{\frac{3!}{3!}}}{\frac{10!}{4!\,6!}} = 0{,}1666$$

b) $\underset{x\ n\ a\ N}{h(3,4,7,10)} = \frac{{}_7C_3\ {}_3C_0}{{}_{10}C_4} = \frac{\frac{7!}{3!\,4!} \cdot \frac{3!}{3!}}{\frac{10!}{4!\,6!}} = 0,1666$

$h(2,4,7,10) = \frac{{}_7C_2 \cdot {}_3C_2}{{}_{10}C_4} = \frac{\frac{7!}{2!\,5!} \cdot \frac{3!}{2!}}{\frac{10!}{4!\,6!}} = 0,3$

$h(4,4,7,10) = 0,1666$

$P = 0,6332$ esta mal, ~~[illegible]~~

(4) $\mu = 50$

$n = 5$ $\qquad a = 20\% \cdot 50 = 10$

$x = 2$

$a = 10$

$\underset{x\ n\ a\ N}{h(2,5,10,50)} = \frac{{}_aC_x\ {}_{N-a}C_{n-x}}{{}_NC_N} = \frac{\frac{10!}{2!\,8!} \cdot \frac{40!}{3!\,37!}}{\frac{50!}{5!\,45!}} =$

$\frac{45 \cdot 9880}{2118760}$

$\underset{x\ n\ a\ N}{h(2,3,18,20)} = \frac{{}_{18}C_2\ {}_2C_1}{{}_{20}C_3} = \frac{\frac{18!}{2!\,16!} \cdot \frac{2!}{[illegible]}}{\frac{20!}{3!\,17!}} =$

(5) Poisson

$\lambda = 5$ veces | dia

1 − Ac

1 2 3 4 | 5 | 6

a) $x > 5$

$1 - 0{,}615961$

$P(x>5\ ;\ \lambda=5) = \cancel{\;\;} = 0{,}384039$

b) $x = 0$

$P(x=0\ ;\ \lambda=5) = 0{,}006738$

c) entre 4 y 7 inclusive (veces)

1 2 3 | 4 5 6 7 — 3, 7

$P = 0{,}866628 - 0{,}265026 = 0{,}601602$

(6) Poisson

a) $\lambda = 3$ $\quad x = 0$

$P(0,3) = 0{,}049787$

b) $\lambda = 9$ — 3

3 err — 1 pag

$$P(5,9) = \frac{e^{-9} \cdot 9^5}{5!} = 0{,}06072$$

c) $\lambda = 6$ — 2

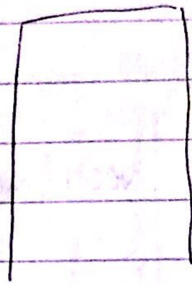
3 err — 1 pag

1 2 3 | 4 5 6

$P(3,6) = 0{,}151204$

⑦

0,4 llamadas — 1 min
1 llamada — 2,5 min
λ = 2,5 min
x = 1



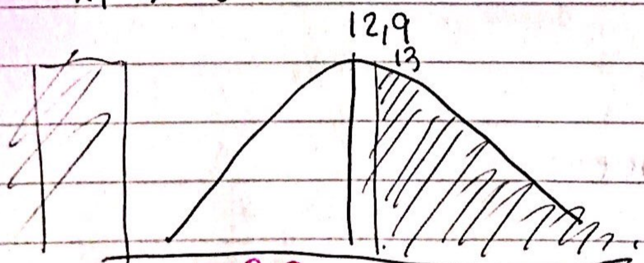
a) λ = 0,4 llamadas
x ≥ 1
1 − 0,670320 = 0,32968

b) 0,4 llam — 1 min
1,6 = x — 4 min

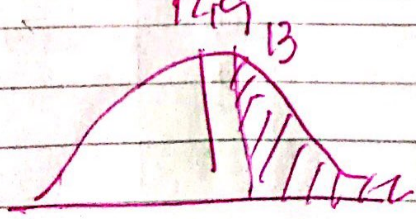
$P(x \leq 2 ; \lambda = 1{,}6) = 0{,}524931$

⑧ μ = 12,9 min
σ = 2 min.
x_i > 13 min.

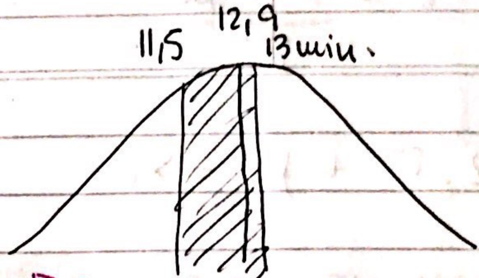
a) $z = \frac{13 - 12{,}9}{2} = 0{,}05$



P = 1 − 0,5199 = 0,4801
hasta 13



b) entre 11,5 y 13 min



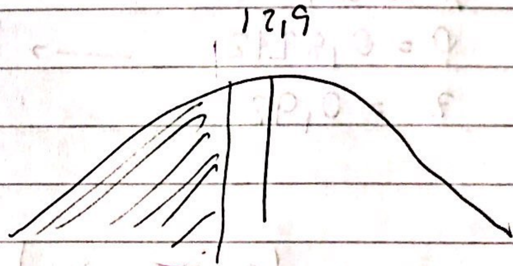
$z = \frac{11,5 - 12,9}{2}$

Hago por separado

hasta 11,5 = P = 0,7580.

$P = P_{13} - P_{11,5} = 0,2799$

c) menos de 12



$z = \frac{12 - 12,9}{2} = 0,45$

$P = 1 - 0,6736 = 0,3264$

9) $\mu = 90$
$\sigma = 15$ min
$P = 0,90$

	equivale a	
0,8997	—	1,28
0,9015	—	1,29
0,0018	—	0,01

necesito para 0,9 — 0,0003 — x = 0,0016

0,8997 + 0,003 — 1,28 + 0,0016 = 1,2816

$$z = \frac{x_i - \mu}{\sigma}$$

$$z \cdot \sigma + \mu = x_i$$

$$1{,}2816 \cdot 15 + 90 = x_i = \boxed{109{,}225 \text{ min}}$$

(10)

$\sigma = 10$

$X < 82{,}5$

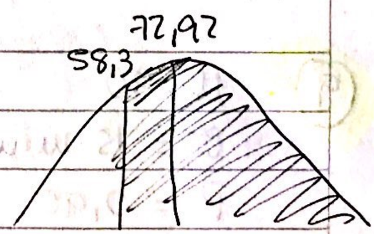
$p = 0{,}8212$ ⟶ busco en tabla y calculo μ.

$z = 0{,}92$

$$\mu = -(z \cdot \sigma - x_i)$$

$$\mu = -(0{,}92 \cdot 10 - 82{,}12)$$

$$\mu = 72{,}92$$



Ahora con μ puedo calcular

$$z = \frac{58{,}3 - 72{,}92}{10} = 1{,}462$$

$P =$	$0{,}9279$	— $1{,}46$
	$0{,}9292$	— $1{,}47$
	$0{,}0013$	— $0{,}01$
	$0{,}00026 = x$	— $0{,}002$

$$P(z = 1{,}462) = 0{,}9279 + 0{,}00026 = 0{,}92816$$

11 maquina → binomial

a) $b(3,8,0,3) = 0,2541$ } → puntual

~~$1 - B(2,10,0,3) = 1 - 0,3828 = 0,6172$~~

1	10
2	9
3	8
4	7
5	6
6	4
10	0

b) $B(7,10,0,3) = 0,9984$

Def	No D
0	10
1	9
2	8
3	7
4	6
5	5
6	4
7	3
8	2
9	1
10	0

me dice por lo menos 3 no sean def ≥ 3

12 $\sigma = 5$

$X < 72,5$

$P = 0,9810$

$\mu = ?$

$z = ?$ → por tabla

$$z = \frac{x_i - \mu}{\sigma}$$

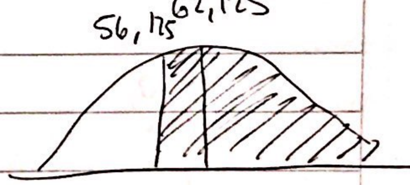
0,9808	—	2,07
0,9812	—	2,08
0,0004	—	0,01
0,0002	—	$x = 0,005$

$\mu = -(z \cdot \sigma - x_i)$

$\mu = -(2,075 \cdot 5 - 72,5)$

$\mu = 62,125$

$P = 0,9810$ → $\boxed{2,075 = z}$.



$$z = \frac{56,125 - 62,125}{5} = -1,2$$

$P = 0,8849$

13

$\sigma = 4$

$x = 34{,}3$

$P = 0{,}8780$

$\mu = ?$

$z =$

Calculo de z

$0{,}8770 \quad — \quad 1{,}16$

$0{,}8790 \quad — \quad 1{,}17$

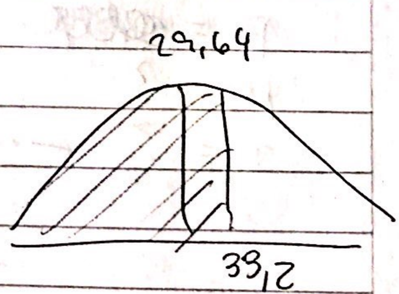
$0{,}002 \quad — \quad 0{,}01$

$0{,}001 \quad — \quad x = 0{,}005$

$P = 0{,}8780 \longrightarrow z = 1{,}165$

$\mu = -(z \cdot \sigma - x_i)$

$\mu = -(1{,}165 \cdot 4 - 34{,}3) = 29{,}64$



$z = \frac{33{,}2 - 29{,}64}{4} = 0{,}89$

$P = 0{,}8133$

(14)

$\sigma = 4$

$x = 35,3$

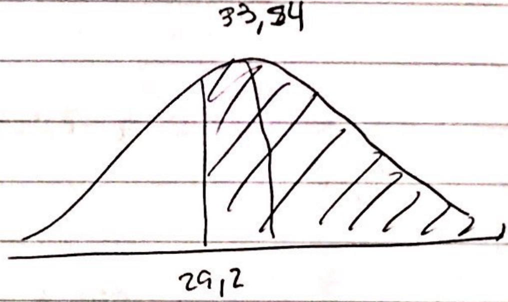
$p = 0,6700$

$\mu = ?$

$z = 0,44$

$\mu = -(0,44 . 4 - 35,3) = 33,54.$

$x_i > 29,2$



$z = 1,085$

0,8599 — 1,080

0,8621 — 1,090

0,0022 — 0,01

0,0011 = x — 0,005

$z = 1,085$ $\quad P = 0,8599 + 0,0011 = 0,861$

Ejercicio Final

$\sigma^2 = 4$

$x < 14,5$

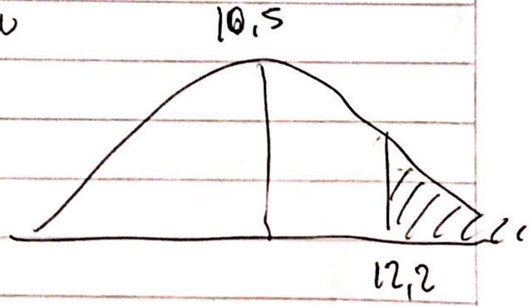
$p = 0,9772$

$z = 2,0$

$\mu = -(2.2 - 14,5) = 10,5$

$z = \dfrac{x_i - \mu}{\sigma}$

$-(z.\sigma - x_i) = \mu$



$z = \dfrac{12,2 - 10,5}{\sqrt{4}} = 0,85$

$P = 1 - 0,8023 = 0,1977$

ESTIMACIÓN DE PARAMETROS.

① $n = 49$

$x = 32{,}25$

$\sigma = 3{,}50$

$\alpha = 0{,}01$

$1-\alpha = 0{,}99$

$\alpha/2 = 0{,}005 + 0{,}99 =$

$z_{\alpha/2} = 2{,}576$

$$32{,}25 - 2{,}576 \cdot \frac{3{,}5}{\sqrt{49}} \leq \mu \leq 32{,}25 + 2{,}576 \cdot \frac{3{,}5}{\sqrt{49}}$$

$$32{,}25 - 1{,}288 \leq \mu \leq 32{,}25 + 1{,}288$$

$$\boxed{30{,}962 \leq \mu \leq 33{,}538}$$

② $\alpha = 0{,}05$ $\quad n = 10$

$1-\alpha = 0{,}95$ $\quad x = 3{,}02$

$\alpha/2 = 0{,}025$ $\quad \sigma = 0{,}1939$

$z_{\alpha/2} = 1{,}96$ $\quad = 0{,}204396$

$$2{,}893314 \leq \mu \leq 3{,}146685$$

Scanned with CamScanner

③ $n = 9$ $\qquad x = 12{,}54$

$\alpha = 0{,}05$

$1 - \alpha = 0{,}95$

$\alpha/2 = 0{,}025.$

$S = 1{,}7799$

$$\frac{8 \cdot 1{,}7791^2}{17{,}5351} \leq \sigma^2 \leq \frac{8 \cdot 1{,}7791^2}{2{,}180}$$

$$1{,}44408076 \leq \sigma^2 \leq 11{,}6154\,0114$$

④ $\alpha = 0{,}05$

$1 - \alpha = 0{,}95$

$n = 12$

$x = 6{,}80$

$\sigma = 1{,}53$

$$6{,}80 - 1{,}96 \frac{1{,}53}{\sqrt{12}} \leq \mu \leq$$

$$5{,}934321006 \leq \mu \leq 7{,}665678994$$

⑤

$$12{,}05 - 1.96 \frac{2{,}15}{\sqrt{30}} \leq \mu \leq 12{,}05 + 1.96 \frac{2{,}15}{\sqrt{30}}$$

$$11{,}28063238 \leq \mu \leq 12{,}81936762$$

(6)

$n = 100$

$s^2 = 256 \qquad S = 16$

$X = 76$

$z_{\alpha/2} = 1{,}645$

$$(2{,}632)$$

$$76 - 1{,}645 \cdot \frac{16}{\sqrt{100}} \leq \mu \leq 76 + 1{,}645 \cdot \frac{16}{\sqrt{100}}$$

$$73{,}368 \leq \mu \leq 78{,}632$$

(7)

$n = 20$

$X = 7{,}2$

$s^2 = 1{,}6$

$\alpha = 0{,}02 \qquad \alpha | 2 = 0{,}01$

$\alpha - 1 = 0{,}98$

$$\frac{19 \cdot 1{,}6}{36{,}191} \leq \sigma^2 \leq \frac{19 \cdot 1{,}6}{7{,}633}$$

$$0{,}8399878423 \leq \sigma^2 \leq 3{,}982706668$$

(8)

$n = 200$

$p \cdot q = p(1-p) = s^2$

$\alpha = 0{,}05$

$p = \frac{58}{200} = 0{,}29$

$$0{,}29 - 1{,}96 \cdot \sqrt{\frac{0{,}2059}{200}} \leq P$$

(9) $\frac{51}{120} = 0,425$ p $\qquad q = 0,575$

$n = 120$

$$0,425 - 1,96\sqrt{\frac{0,425 \cdot 0,575}{120}} \leq P \leq$$

$$0,336550815 \leq P \leq 0,513449185$$

Scanned with CamScanner

Pruebas de Hipotesis

PRUEBAS DE HIP.

(1)

$\mu = 3$

$\sigma = 1$

$n = 5$

$x = 2{,}96$

$S = 0{,}8384$

$\alpha = 0{,}05$

$H_0 \rightarrow \mu = x$

$H_1 \rightarrow \mu \neq x$

$-1{,}96 \leq z_c \leq 1{,}96$ Acepto Ho

$z_c \geq 1{,}96 \quad z_c \leq -1{,}96$ Rechazo

$$z_c = \frac{2{,}96 - 3}{\frac{1}{\sqrt{5}}} = -0{,}0894$$

Acepto Ho.

(2)

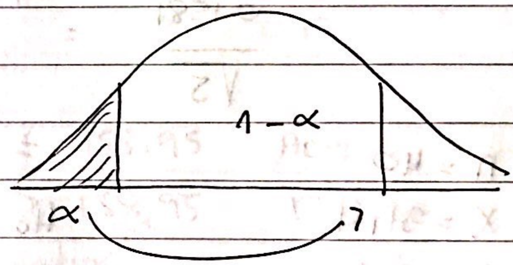
$\alpha = 0{,}05$

$\mu = 10{,}5$

$n = 8$

$S = 3{,}2071$

$x = 14$



$H_0 = \mu \leq x$

$H_1 = \mu > x$

Si $t_c \leq 1{,}645$ Acepto Ho

Si $t_c > 1{,}645$ Rechazo

$$t_c = \frac{14 - 10{,}5}{\frac{3{,}2071}{\sqrt{8}}} = 3{,}086$$ Rechazo Ho.

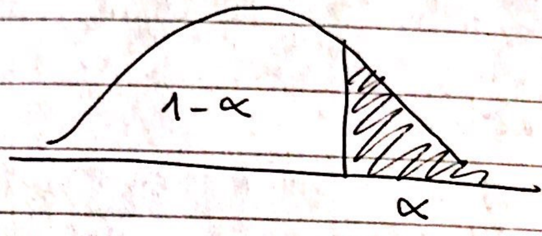
(3) $\mu = 14$

$\alpha = 0{,}05$

$n = 5$

$x = 14{,}4$

$S = 0{,}1581$



$H_0 = \mu \leq 14$

$H_1 = \mu > 14$

$t_c \leq 1{,}645$ Acepto Ho

$t_c > 1{,}645$ Rechazo.

$$t_c = \frac{14{,}4 - 14}{\frac{0{,}1581}{\sqrt{5}}} = 5{,}657$$ Rechazo Ho.

(4) $n = 40$

$X = 31{,}4$

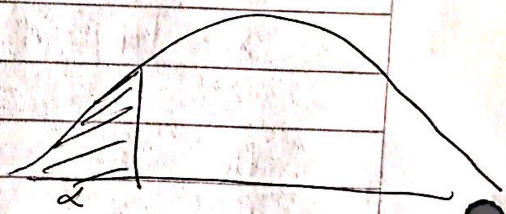
$S = 1{,}6$

$\alpha = 0{,}01$

$\mu = 32{,}3\%$

$H_0 = \mu \geq 32{,}3$

$H_1 = \mu < 32{,}3$



$z_c \geq 2{,}326$ Acepto

$z_c < 2{,}326$ Rechazo

$$z_c = \frac{31{,}4 - 32{,}3}{\frac{1{,}6}{\sqrt{40}}} = -3{,}55$$ Rechazo.

Scanned with CamScanner

11

$n = 121$ $\qquad$ $H_0 = \mu \geq 10{,}5$

$X = 10{,}1$ $\qquad$ $H_1 \quad \mu < 10{,}5$

$S = 0{,}1678$

$\alpha = 0{,}05$ $\qquad$ $Zc \geq 1{,}645$ Acepto

$\mu = 10{,}5$ $\qquad$ $Zc < 1{,}645$ Rechazo.

a) $$Zc = \frac{10{,}1 - 10{,}5}{\frac{0{,}1678}{\sqrt{121}}} = -26{,}22169$$ Rechazo Ho.

b) $\alpha = 0{,}01$

$\sigma \leq 0{,}15$ $\qquad$ $H_0 = \sigma \leq 0{,}15$

$\qquad$ $H_1 = \sigma > 0{,}15$

$$X^2 = \frac{120 \cdot (0{,}1678)^2}{0{,}15^2} = 150{,}16$$

$X^2 \leq 158{,}95$ Acepto

$X^2 > 158{,}95$ rechazo

Acepto.

Caso 1 no existe ninguna valor que me condicione

T1	T2	T3
5	6	7
6	4	5
7	6	5
6	7	6
9	6	6
6	7	4

$SSTr = 6.(6,5-6)^2 + 6.(6-6)^2 + 6.(5,5-6)^2$

$SSTr = 1,5 + 0 + 1,5 = 3$

$SEE = \overset{(n-1)}{5}. 1,9 + 5.1,2 + 5.1,1$

$SEE = 21$

$SST = 21 + 3$

$\mu_1 = \mu_2 = \mu_3$

$\alpha = 0,01$

$X_1 = 6,5 \quad X_2 = 6 \quad X_3 = 5,5$

$S_1^2 = 1,9 \quad S_2^2 = 1,2 \quad S_3^2 = 1,1$

$MSTr = \frac{3}{3-1} = 1,5$

num ← 2gl

$MSE = \frac{21}{18-3} = 1,4$

denominador ← 15

$\overline{\overline{X}} = 6$

$n = 6.3 = 18$

$F_c = \frac{1,5^{\ 2GL}}{1,4_{\ 15GL}} = 1,0714$

$F = 6,36$

Si me queda a la izquierda la acepto y sino la rechazo

No hay diferencias significativas entre las medias.

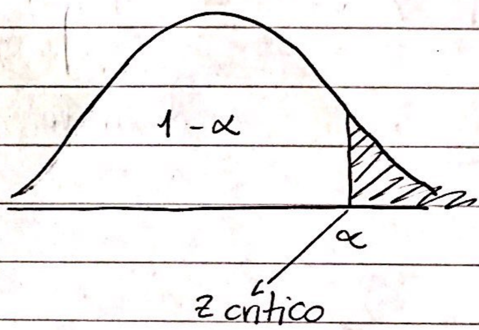
Si me preg si producen la misma cant de def? Si xq no existen

Se encuentran dif sig entre maquinas? No.

Ejemplo Caso 1

Un camionero transporta bolsas de harina de promedio 50 kg con una varianza de 4 kg^2. Para no pasarse del peso necesita probar con una significación del 5% que las bolsas no superen ese peso.
Para esto toma una muestra de 25 bolsas y le da una media de 51 kg con una desviación estandar de 3kg.

Prueba lateral derecha.



1 - Formular hipotesis nula y alternativa

$H_0 \rightarrow \mu \leq 50$

$H_1 \rightarrow \mu > 50$] me marca la zona de rechazo.

2 - Especificar el nivel de significacion

$\alpha = 0{,}05$

3 - Obtener el resto de los datos y determinar el estadistico

$\alpha = 0{,}05$ $\quad n = 25$

$\sigma = 2$ $\quad \bar{x} = 51$

$S = 3$ $\quad \mu = 50$

4 - Establecer los valores criticos que dividen las regiones de rechazo y no rechazo.

Si $Z_c \leq 1{,}645$ Acepto H_0

Si $Z_c > 1{,}645$ Rechazo H_0

5- Calcular estadístico y ver en donde cae

$$z = \frac{x - \mu}{\frac{\sigma}{\sqrt{n}}} = \frac{51 - 50}{\frac{2}{\sqrt{25}}}$$

$$z = 2,5$$

Rechazo H_0 $\quad Z_c > 1,645$.

Caso 2 $\quad \sigma$ por S

Caso 3 $\quad$ distribución t.