

01. X : "Precio de una PC" $\sim N(12000, 2000)$ (en \$).

$$P(X < 11000) = P\left(\frac{X - 12000}{2000} < \frac{11000 - 12000}{2000}\right) \\ = P(Z < -0,5) = 0,3085$$

N : "Cant. tiendas $X < 11000$ " $\sim b(3, 0,3085)$

$$P(N \geq 1) = \sum_{k=1}^3 \binom{3}{k} 0,3085^k 0,6915^{3-k} + \binom{3}{2} 0,3085^2 0,6915^1$$

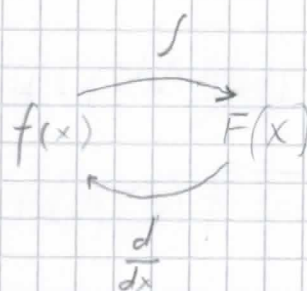
$$\binom{3}{3} 0,3085^3 0,6915^0 = 0,6693$$

02.

$$F(x) = \begin{cases} 0 & , x < 0 \\ 1 - e^{-1/4 x} & , x \geq 0 \end{cases}$$

$$f(x) = \begin{cases} +\frac{1}{4} e^{-1/4 x} & , x \geq 0 \\ 0 & , x < 0 \end{cases}$$

$$\binom{3}{0} 0,3085^0 0,6915^3$$



$$a. E(X) = \int_0^{\infty} x \cdot f(x) dx = \int_0^{\infty} x \left(\frac{1}{4} e^{-1/4 x} \right) dx =$$

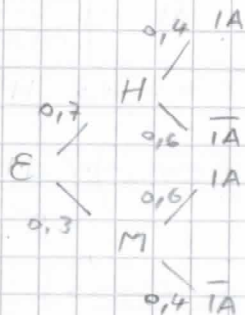
5/1

$$= \frac{1}{4} \int_0^{\infty} x \cdot e^{-1/4 x} dx = \frac{1}{4} \left(\frac{e^{-1/4 x}}{-1/4} \right) \left(x - \frac{1}{(-1/4)} \right) \Big|_0^{\infty}$$

$$= e^{-1/4 x} (x - 4) \Big|_0^{\infty} = 0 - (-4) = 4$$

$$L. P(X > 140) = P(X > k + x_0) = e^{-\lambda x_0} = e^{-\frac{1}{4} \cdot 20}$$

03.



$$P(H|IA) = \frac{P(H)P(IA|H)}{P(H)P(IA|H) + P(M)P(IA|M)} = \frac{0,7 \cdot 0,4}{0,7 \cdot 0,4 + 0,3 \cdot 0,6} = 0,6086$$

04.

$$P(A) = 0,5, \quad P(A|B) = 0,5, \quad P(A \cup B) = 0,3.$$

$$P(\bar{A} \cap B)?$$

$$P(A) = P(A|B) \Rightarrow A \text{ y } B \text{ independientes}$$

$$\Rightarrow P(A|B) = \frac{P(A \cap B)}{P(B)} \Rightarrow P(A \cap B) = \underline{P(A)} \cdot \underline{P(B)}$$

$$P(\overline{A \cup B}) = 0,3 \Rightarrow P(\overline{A \cup B}) = P(\bar{A} \cap \bar{B}) = 0,3$$

$$P(\overline{A \cup B}) = 1 - P(A \cup B) = 1 - 0,3 = 0,7.$$

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$P(A \cup B) = P(A) + P(B) - \overline{P(A) \cdot P(B)}.$$

$$P(B) = \frac{P(A \cup B) - P(A)}{1 - P(A)} = \frac{0,7 - 0,5}{1 - 0,5} = \frac{0,2}{0,5} = 0,4$$

$$P(\bar{A}) = 1 - P(A) = 1 - 0,5 = 0,5$$

$$P(\bar{A} \cap B) = P(\bar{A}) \cdot P(B) = 0,5 \cdot 0,4 = 0,2$$

