1

i) $\frac{6}{36} = \boxed{\frac{1}{6}}$ ii) $\frac{26}{36} = \boxed{\frac{13}{18}}$ iii) $\boxed{\frac{15}{36}}$

2

$F1 = 0.20$ $DF1 = 0.2$

$F2 = 0.3$ $DF2 = 0.05$

$F3 = 0.5$ $DF3 = 0.02$

A= "Fabricante F1"

B= "Defectuoso"

$$P(A|B) = \frac{P(B|A)P(A)}{P(B)} = \frac{0.04}{0.065} = \boxed{0.6153}$$

$P(A \cap B) = 0.2 * 0.2$

$P(B) = P(B|A)P(A) + P(B|DF2)P(F2) + P(B|DF3)P(F3)$

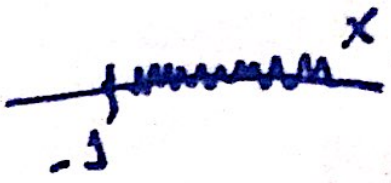
$P(B) = 0.2 * 0.2 + 0.05 * 0.3 + 0.02 * 0.5$

(3)

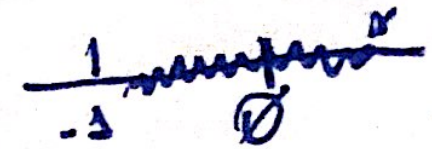
$$\int_{-1}^{x} x+1\,dx = \frac{x^2}{2} + x + \frac{1}{2}$$

$$= \frac{1}{2}(x+1)^2$$

$-1 > x$



$0 < x$



$$\int_{-1}^{0} x+1\,dx + \int_{0}^{x} 1-x\,dx = \frac{1}{2} + x - \frac{x^2}{2}$$

④

10 B
5 P
5 L

Bola Preta → R$ 2
Bola Branca → - R$ 1
Bola Laranja → R$ ∅

Variável aleatória X

2a Bolas

Selecciona 2 bolas.

Resultados Possíveis

$\Omega = \{(B,P),(B,L),(B,B),$
$(P,P),(P,L),(P,B),$
$(L,B),(L,L),(L,B)\}$

Saídas Possíveis e possíveis ganhos

Saídas	x	Prob
(B,P)	1	$\frac{10}{20}\cdot\frac{5}{19}$
(B,L)	-1	$\frac{10}{20}\cdot\frac{5}{19}$
(B,B)	-2	$\frac{10}{20}\cdot\frac{9}{19}$
(P,P)	4	$\frac{5}{20}\cdot\frac{4}{19}$
(P,L)	2	$\frac{5}{20}\cdot\frac{5}{19}$
(P,B)	1	$\frac{5}{20}\cdot\frac{10}{19}$
(L,B)	-1	$\frac{5}{20}\cdot\frac{10}{19}$
(L,L)	0	$\frac{5}{20}\cdot\frac{4}{19}$
(L,B)	2	$\frac{5}{20}\cdot\frac{10}{19}$

$(x=1) = \left(\frac{10}{20}\cdot\frac{5}{19}\right)\times\left(\frac{5}{20}\cdot\frac{10}{19}\right) = 0.017$

$(x=-1) = \left(\frac{10}{20}\cdot\frac{5}{19}\right)\times\left(\frac{5}{20}\cdot\frac{10}{19}\right) = 0.017$

$(x=-2) = \left(\frac{10}{20}\cdot\frac{9}{19}\right) = 0.236$

$(x=4) = \left(\frac{5}{20}\cdot\frac{4}{19}\right) = 0.052$

$(x=2) = \left(\frac{5}{20}\cdot\frac{5}{19}\right)\times\left(\frac{5}{20}\cdot\frac{10}{19}\right) = 0.008$

$(x=0) = \left(\frac{5}{20}\cdot\frac{4}{19}\right) = 0.0526$

$= -0.24$

6.

ATENTO

(5)

$$E(x) = \int_{-1}^{0} x(x+1)\,dx + \int_{0}^{1} x(1-x)\,dx = 0$$

$$E(x)^2 = \int_{-1}^{0} x^2(x+1)\,dx + \int_{0}^{1} x^2(1-x)\,dx = \frac{1}{6}$$

$$\text{Var}(x) = E(x)^2 - [E(x)]^2$$

$$\text{Var}(x) = \frac{1}{6} - [0]^2 = \boxed{\frac{1}{6}}$$