

DICIEMBRE

31

Miércoles
wednesday quarta-feira

365

 $x = (x_1, x_2)$ $x_1, x_2 \sim \text{iid. uniform in } [-1, 1]$

2014

$$f(x) = f_0 + f_1(x_1) + f_2(x_2) + f_{12}(x_1, x_2)$$

Festivo en: BRA - C.R. - CUB - GUA - P.R. - PAN - VEN

x

08 where:

$$f_0 = \int_{-1}^1 \int_{-1}^1 f(x) \cdot \frac{1}{2} dx_1 \cdot \frac{1}{2} dx_2 \equiv \text{const}$$

↓

mean of f .

$$f_1(x_1) = \int_{-1}^1 f(x) \cdot \frac{1}{2} dx_2 - f_0$$

$$f_2(x_2) = \int_{-1}^1 f(x) \cdot \frac{1}{2} dx_1 - f_0$$

$$f_{12}(x_1, x_2) = f(x) - f_1(x_1) - f_2(x_2) - f_0$$

By definition:

$$\text{Var}[f] := \int_{-1}^1 \int_{-1}^1 f^2(x) \cdot \frac{1}{2} dx_1 \cdot \frac{1}{2} dx_2 - f_0^2$$

ENE

SEM 01

L	M	M	J	V	S	D
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

M T W T F S S

Haz de manera que seas tú el admirado y
no lo que te pertenece.

Juvenal

Jueves
thursday quinta-feira

1-364

1

07 Thus:

08 $\text{Var}[f] = \int_{-1}^1 \int_{-1}^1 (f_0 + f_1 + f_2 + f_{12})^2 \cdot \frac{1}{2} dx_1 \cdot \frac{1}{2} dx_2$

FESTIVO MUNDIAL - WORLD HOLIDAY

09

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11

$$= \int_{-1}^1 \int_{-1}^1 f_0^2 \cdot \frac{1}{2} dx_1 \cdot \frac{1}{2} dx_2 \rightarrow \cancel{f_0^2}$$

12

01

$$+ \int_{-1}^1 \int_{-1}^1 f_1^2 \cdot \frac{1}{2} dx_1 \cdot \frac{1}{2} dx_2$$

02

03

$$+ \int_{-1}^1 \int_{-1}^1 f_2^2 \cdot \frac{1}{2} dx_1 \cdot \frac{1}{2} dx_2$$

04

05

$$+ \int_{-1}^1 \int_{-1}^1 f_{12}^2 \cdot \frac{1}{2} dx_1 \cdot \frac{1}{2} dx_2$$

06

07

$$+ 2f_0 \int_{-1}^1 \int_{-1}^1 f_1 \cdot \frac{1}{2} dx_1 \cdot \frac{1}{2} dx_2$$

0 (due to OP)

OP: orthogonality property.

L	M	M	J	V	S	D	FEB
						1	
2	3	4	5	6	7	8	
9	10	11	12	13	14	15	
16	17	18	19	20	21	22	
23	24	25	26	27	28		
M	T	W	T	F	S	S	

0 (due to OP).
Sábado
saturday sábado
3-362

$$+ 2f_0 \int_{-1}^1 \int_{-1}^1 f_2 \cdot \frac{1}{2} dx_1 \cdot \frac{1}{2} dx_2$$

$$+ 2f_0 \int_{-1}^1 \int_{-1}^1 f_{12} \cdot \frac{1}{2} dx_1 \cdot \frac{1}{2} dx_2$$

$$+ 2 \int_{-1}^1 \int_{-1}^1 f_1 f_2 \cdot \frac{1}{2} dx_1 \cdot \frac{1}{2} dx_2$$

$$+ 2 \int_{-1}^1 \int_{-1}^1 f_1 \cdot f_{12} \cdot \frac{1}{2} dx_1 \cdot \frac{1}{2} dx_2$$

$$+ 2 \int_{-1}^1 \int_{-1}^1 f_2 \cdot f_{12} \cdot \frac{1}{2} dx_1 \cdot \frac{1}{2} dx_2$$

Domingo
sunday domingo
4-361

Hence:

$$\text{Var}[f] = \int_{-1}^1 f_1^2 \cdot \frac{1}{2} dx_1 + \int_{-1}^1 f_2^2 \cdot \frac{1}{2} dx_2$$

$$+ \int_{-1}^1 \int_{-1}^1 f_{12}^2 \cdot \frac{1}{2} dx_1 \cdot \frac{1}{2} dx_2$$

L	M	M	J	V	S	D
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	
M	T	W	T	F	S	S

FEB

Martes
tuesday terça-Feira
6-359

6

07 orthogonality check:

Festivo en: P.R. - R.D. - URU

08

09

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01

02

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$$\int_{-1}^1 f_1(x_1) \cdot \frac{1}{2} dx_1 \equiv 0.$$

$$\int_{-1}^1 f_2(x_2) \cdot \frac{1}{2} dx_2 \equiv 0$$

$$\int_{-1}^1 \int_{-1}^1 f_{12}(x_1, x_2) \cdot \frac{1}{2} dx_1 \cdot \frac{1}{2} dx_2 \equiv 0.$$

L	M	M	J	V	S	D	FEB
						1	
2	3	4	5	6	7	8	
9	10	11	12	13	14	15	
16	17	18	19	20	21	22	
23	24	25	26	27	28		
M	T	W	T	F	S	S	