

VRSVFMF2026-01-16

N nadafenafu o2 zadufic ...

N

$$p_{X,Y}(x,y) = \begin{cases} 2e^{-x}; & x > y > 0 \\ 0; & \text{sicer} \end{cases}$$

$$Z := X + Y = ?$$

$$F_Z = ?$$

...

N

LEAF 102

$y = h(x)$ v? $\rightarrow$ interval!

$h: (a,b) \rightarrow (c,d)$ bijektiv

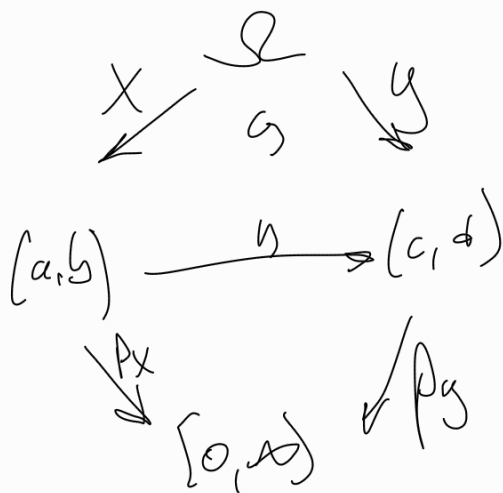
$h^{-1}: (c,d) \rightarrow (a,b)$ tuzna odredjena

X naf ina gostoto p_X .

Defina y gostoto

$$p_Y(y) = \begin{cases} p_X(h^{-1}(y)) |h^{-1}'(y)| & ; y \in (c,d) \\ 0 & ; \text{sicer} \end{cases}$$

$$p_X(x)dx = p_Y(y)dy$$



$$X \sim N(0,1) \quad Y := e^X \sim ? \quad h(x) = e^x \quad h^{-1}(y) = \ln y$$

$$a = -\infty, b = \infty, c = 0, d = \infty$$

$$p_X(x) = \frac{1}{\sqrt{2\pi}} e^{-\frac{x^2}{2}}$$

$$p_Y(y) = \begin{cases} p_X(\ln y) \left| \frac{1}{y} \right| & ; y \in (0, \infty) \\ 0 & ; \text{sicer} \end{cases}$$

$$= \begin{cases} \frac{e^{-\frac{1}{2}y^2}}{\sqrt{2\pi}} \cdot \frac{1}{y} & ; y \in (0, \infty) \\ 0 & ; \text{si ne} \end{cases}$$

lognormalni
porazdelitev.

N

$$X \sim N(0, 1) \quad W = (X-1)^2 \sim ?$$

let $A \subseteq \mathbb{R}$ odprta, x dvojna sprevodljivka
+ vrednosti v A in gostoto p_X .

$h: A \rightarrow \mathbb{R}$ ~~zelo~~ zredljiva, let $\underbrace{P(h'(x) = 0) = 0}$

" h mora migati"

Tedaj ima $y = h(x)$ gostoto $f_Y(y) = \sum_{\substack{x \in A \\ h(x) = y \\ h'(x) \neq 0}} \frac{p_X(x)}{|h'(x)|}$

$h(x) = y$
 $h'(x) \neq 0$

...