- $\mathrm{Cov}(X,Y) = E(X \cdot Y) - E(X)E(Y) = \frac{1}{2} - \frac{17}{24} = -0{,}01736$
- $r(X,Y) = \frac{\mathrm{Cov}(X,Y)}{\sigma(X)\sigma(Y)} = \frac{-0{,}01736}{\sqrt{0{,}04726} \cdot \sqrt{0{,}04726}} = \underline{\underline{-0{,}036}}$ med X in Y ni linearne odvisnosti / vzgleda.

(3) (X,Y,Z)

$$\begin{array}{c|ccc} & x & y & z \\ \hline x & 2 & 1 & -1 \\ y & 1 & 1 & -1 \\ z & -1 & -1 & 2 \end{array}$$

- matrika simetrična po diagonali
- ker $\mathrm{Cov}(X,Y) = \mathrm{Cov}(Y,X)$

$U = aX + 2Y + Z$
$V = X - Y + aZ$

$\mathrm{Cov}(U,V) = 0 \Rightarrow \mathrm{Cov}(aX + 2Y + Z, X - Y + aZ) = 0 \Rightarrow$

$\Rightarrow a\,\mathrm{Cov}(X,X) - a\,\mathrm{Cov}(X,Y) + a^2\mathrm{Cov}(X,Z) + 2\,\mathrm{Cov}(Y,X) - 2\,\mathrm{Cov}(Y,Y) +$
$+ 2a\,\mathrm{Cov}(Y,Z) + \mathrm{Cov}(Z,X) - \mathrm{Cov}(Z,Y) + a\,\mathrm{Cov}(Z,Z) =$

$= a \cdot 2 - a \cdot 1 + a^2 + 2 \cdot 1 + 2 \cdot a(-1) - 1 + 1 + 2a = -a^2 + a + 0 = 0$

$-a^2 + a = 0$

$a(-a+1) = 0$ $\quad a_1 = 0$, $\underline{\underline{a_2 = 1}}$

$\boxed{\int \frac{1}{(1+x)^2}\,dx = -\frac{1}{x+1} = 1}$

(5) višji momenti

$m_2(a) = E((X-a)^2)$

asimetrija (Ravnovesje)

$A(X) = \frac{E((X-E(X))^3)}{D(X)^{\frac{3}{2}}}$

sploščenost

$K(X) = \frac{E((X-E(X))^4)}{D(X)^2} - 3$

$X \sim E[a,b]$

$p_X(x) = \begin{cases} \frac{1}{b-a}, & x \in [a,b] \\ 0, & \text{sicer} \end{cases}$

$A(X) = \frac{0}{\ldots} = 0$ (ker ...)

$E((X - E(X))^k) = E((X - \frac{a+b}{2})^k) =$

$= \int_a^b \underbrace{(x - \frac{a+b}{2})^k}_{t}\,dx \cdot \underbrace{\frac{1}{b-a}}\,dx =$

kvadrat... gostota ...

$t = x - \frac{a+b}{2}$, $dt = dx$

$a - \frac{a+b}{2} = \frac{a-b}{2}$, $b - \frac{a+b}{2} = \frac{-a+b}{2}$

$K(X) = \frac{\frac{(\frac{b-a}{2})^4}{5}}{(\frac{(b-a)^2}{12})^2} - 3 = \frac{12^2}{16 \cdot 5} - 3 =$

$= \frac{9}{5} - 3 = \underline{\underline{-\frac{6}{5}}}$ ... zelo ...

$= \frac{1}{b-a}\int_{\frac{a-b}{2}}^{\frac{b-a}{2}} t^k\,dt = \begin{cases} 0, & k \text{ liho} \\ \frac{2}{b-a}\int_0^{\frac{b-a}{2}} t^k\,dt = \frac{2}{b-a} = \end{cases}$

$= \frac{t^{k+1}}{k+1}\Big|_0^{\frac{b-a}{2}} = \frac{(\frac{2}{b-a})^{k+1}}{k+1}$, k ... sod