$U = F_X(X)$ libovolná spojitá rostoucí fce

$$P[U \le u] = P[F_X(x) \le u] = P[X \le F_X^{-1}(u)] = F_X\left(F_X^{-1}(u)\right) = u$$

$u \in \langle 0,1 \rangle$

$$\Rightarrow U = F_X(x) \sim U(0,1)$$

$$\Rightarrow X = F_X^{-1}(U)$$

SLIDE 23:
DALŠÍ PŘÍKLADY
TRANSFORMACE
HUSTOT

Cauchy: $F_X = \frac{1}{\pi}\operatorname{arctg}(x) + \frac{1}{2} \Leftarrow f_X(x) = \frac{1}{\pi}\frac{1}{1+x^2}$

$$U = \frac{1}{\pi}\operatorname{arctg}(X) + \frac{1}{2} \Rightarrow X = \operatorname{tg}\left(\pi \cdot \left(U - \frac{1}{2}\right)\right)$$

(4)

$X = F^{-1}(U) = h(u)$

$$U = F_X(X) = h^{-1}(x) \Rightarrow \left|\frac{dh^{-1}(x)}{dx}\right| = f_X(x)$$

$$f_X(x) = f_U\left(h^{-1}(x)\right) \cdot \left|\frac{dh^{-1}(x)}{dx}\right| = 1 \cdot f_X(x)$$