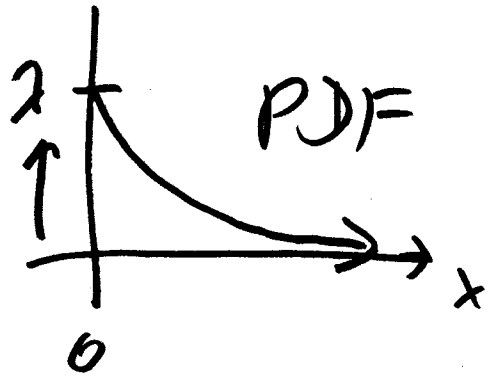
this time: transformations

read: D Ch. 4

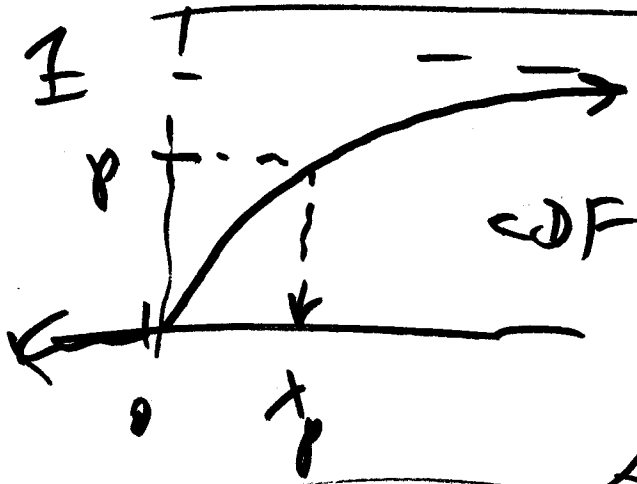
STAT 131
14 May 20
(lecture)

next time: expected value, variance, standard deviation, covariance, correlation

$(X \mid \lambda \sim \text{Exponential}(\lambda)$



$$f_X(x) = \begin{cases} \lambda e^{-\lambda x} & \text{for } x \geq 0 \\ 0 & \text{else} \end{cases}$$

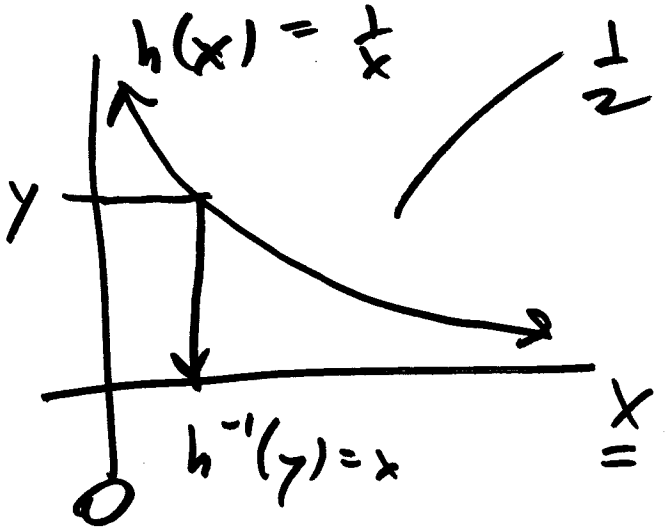


$$F_X(x) = \begin{cases} 0 & \text{for } x < 0 \\ 1 - e^{-\lambda x} & \text{for } x \geq 0 \end{cases}$$

$p = 1 - e^{-\lambda x_p}$

$0 < p < 1$

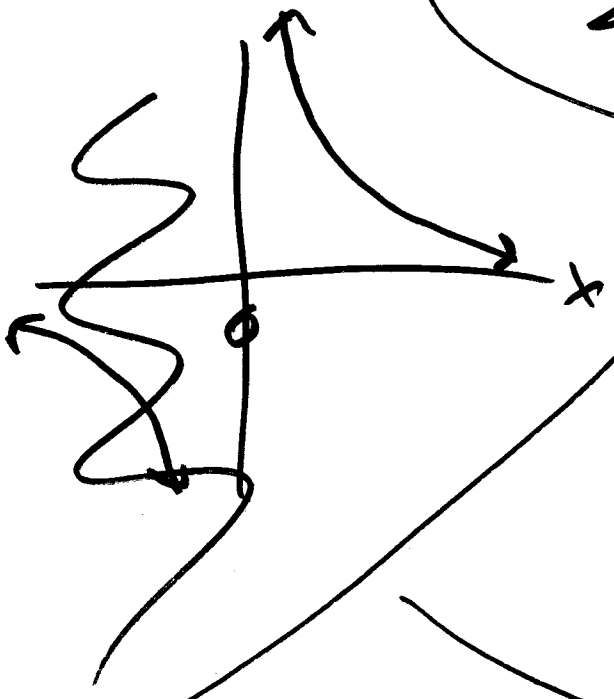
$$F_X^{-1}(p) = -\frac{\log(1-p)}{\lambda}$$



$\frac{1}{2}$ of a hyperbola

$h(x)$ diff. on $(0, \infty)$? yes

& $(1-1)$ on



functions (transformations) of a r.v. or a random vector:

DS sec. 3.8, 3.9

$\frac{x_1}{x_2} = y_1$

$x_1 x_2 = y_2$

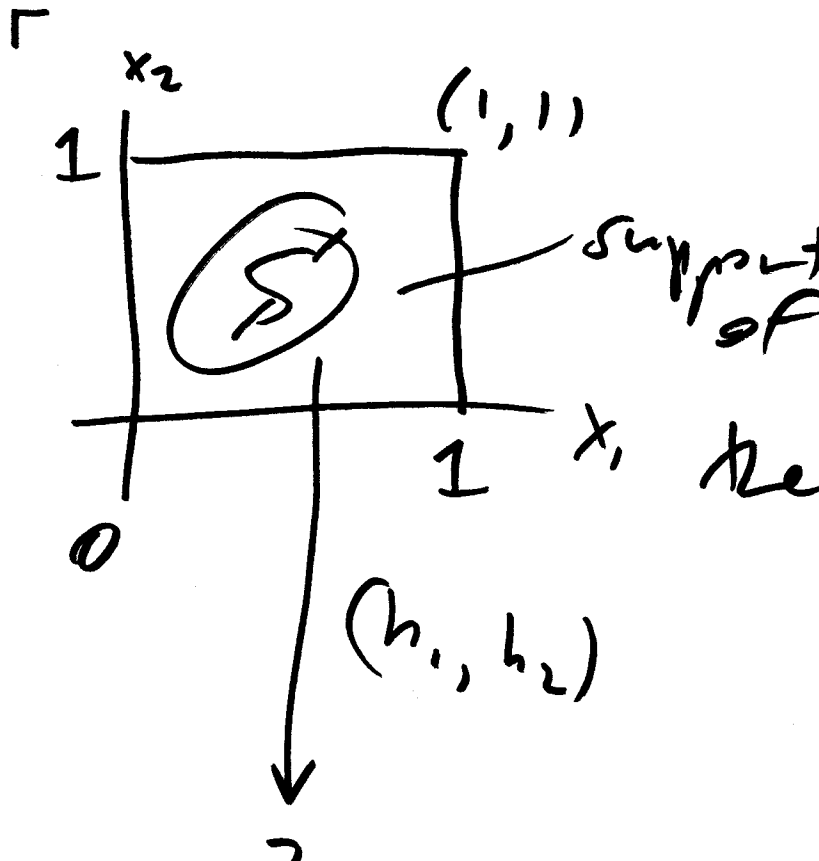
$x_1 = y_1 \cdot x_2 = y_1 \cdot y_2$

$x_2 = \frac{y_2}{x_1}$

$\frac{y_1 \cdot y_2}{x_1}$

$x_1^2 = y_1 \cdot y_2$

$x_1 = \sqrt{y_1 \cdot y_2}$



(T) = support of (X_1, X_2)