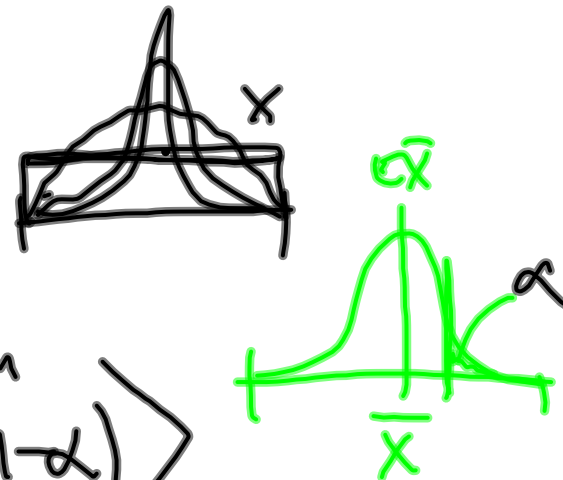


10.2.4

$$\langle 0, 1 \rangle \quad \Phi^{-1}(0,95) = 1,645$$

rovnorné roz.



$$\alpha = 5\%$$

$$N = 10000$$

$$EX = 1/2$$

$$DX = 1/12$$

$$E\bar{X} = EX = 1/2$$

$$D\bar{X} = \frac{1}{N} \cdot DX = \frac{1}{10000} \cdot \frac{1}{12} = \frac{1}{120000}$$

$$\sigma_{\bar{X}} = \sqrt{D\bar{X}}$$

$$\left(-\infty, \bar{X} + \sqrt{D\bar{X}} \cdot \Phi^{-1}(1-\alpha) \right)$$

$$\left(-\infty, \frac{1}{2} + \sqrt{\frac{1}{120000}} \cdot 1,645 \right)$$

$$\left(-\infty, \underline{\underline{0,5047}} \right)$$

Odvození studentova rozdělení při neznámém rozptylu

$$\mu \sim \bar{X} \sim N\left(\mu, \frac{\sigma^2}{n}\right)$$

$$\sigma^2 \sim S_x^2 \rightarrow \frac{(n-1)}{\cancel{\sigma^2}} s_x^2 \sim \chi^2(n-1)$$

$$\chi \sim \frac{U}{\sqrt{\frac{V}{n}}} \sim t(n-1)$$

$$\left(-\infty, \bar{x} + \frac{s_x}{\sqrt{n}} \cdot q_{t(n-1)}(1-\alpha)\right)$$

10.2.2

$$n = 18$$

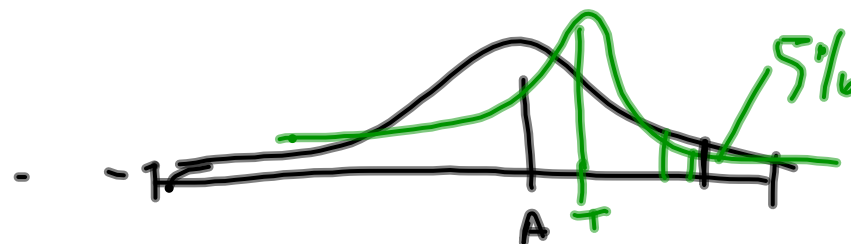
$$\bar{X} = 18,83$$

$$S_A = 2,706$$

$$\bar{Y} = 20,9$$

$$S_T = 1,348$$

$$\alpha = 0,05$$



$$\left(-\infty, \bar{X} + \frac{S_x}{\sqrt{n}} t_{n-1}^{1-\alpha} \right)$$

$$I_A = \left(-\infty, 18,83 + \frac{2,706}{\sqrt{18}} \cdot 1,74 \right)$$

$$I_T = \left(-\infty, 20,9 + \frac{1,348}{\sqrt{18}} \cdot 1,74 \right)$$

$$I_A = \left(-\infty, 23,54 \right)$$

$$I_T = \left(-\infty, 23,25 \right)$$

Poisson - operátoři

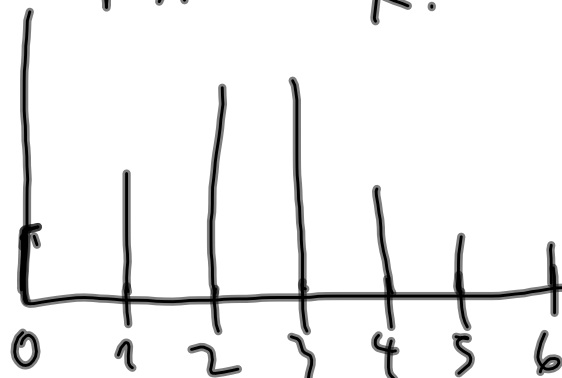
$$a) \lambda = 3$$

$$d = 0,25$$

$$m = ?$$

$$\sum_{k=0}^{\infty} P_X(k) > 0,75$$

$$P_X(k) = \frac{\lambda^k}{k!} e^{-\lambda}$$



k	0	1	2	3	4	5
$P_X(k)$	e^{-3}	$\frac{3}{1} e^{-3}$	$\frac{9}{2} e^{-3}$	$\frac{27}{6} e^{-3}$	$\frac{81}{24} e^{-3}$	$\frac{243}{120} e^{-3}$
					0,82	0,91

$$e^{-3} \left(1 + 3 + \frac{9}{2} + \frac{27}{6} + \frac{81}{24} + \frac{243}{120} \right) = 0,91$$

$$\underline{\underline{m \geq 4}}$$

b)

$$\lambda = 30$$

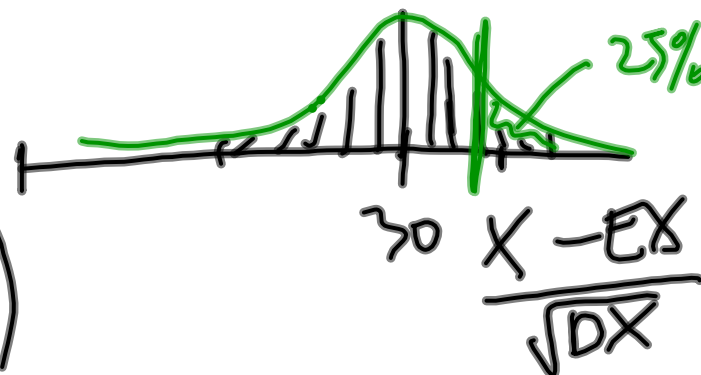
$$EX = \lambda$$

$$\alpha = 0,25$$

$$DX = \lambda$$

$$n = ?$$

$$N(\lambda, \lambda)$$



$$\Phi^{-1}(1 - 0,25) < \frac{n - EX}{\sqrt{DX}}$$

$$0,674 < \frac{n - 30}{\sqrt{30}}$$

$$(0,674 \cdot \sqrt{30}) + 30 < n$$

$$n > 33,69$$

$$\underline{\underline{n = 34}}$$