



# **REVIEW STATISTIK**

**Mata Kuliah Pemodelan & Simulasi**

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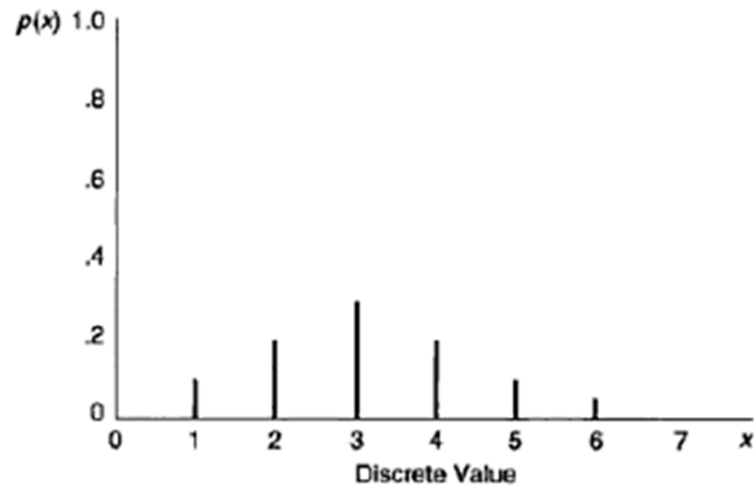
# DATA & VARIABEL

DATA		
DATA KUALITATIF	DATA KUANTITATIF	
<ul style="list-style-type: none"> <li>• Gambaran kualitas objek</li> <li>• Gambaran kondisi objek</li> <li>• Gambaran status objek</li> </ul>	<ul style="list-style-type: none"> <li>• Tinggi Badan</li> <li>• Jumlah Kelahiran</li> <li>• Luas Daerah</li> <li>• Jumlah produk gagal</li> </ul>	
ATRIBUT	DATA/VARIABEL DISKRIT	DATA/VARIABEL KONTINU
Gagal – Berhasil Kotor – Agak Kotor – Sangat Kotor Baik - Buruk	<ul style="list-style-type: none"> <li>• 100 unit</li> <li>• 250 orang</li> <li>• 85 gedung</li> </ul>	<ul style="list-style-type: none"> <li>• 175 cm</li> <li>• 4567,8 km</li> <li>• 55 kg</li> </ul>

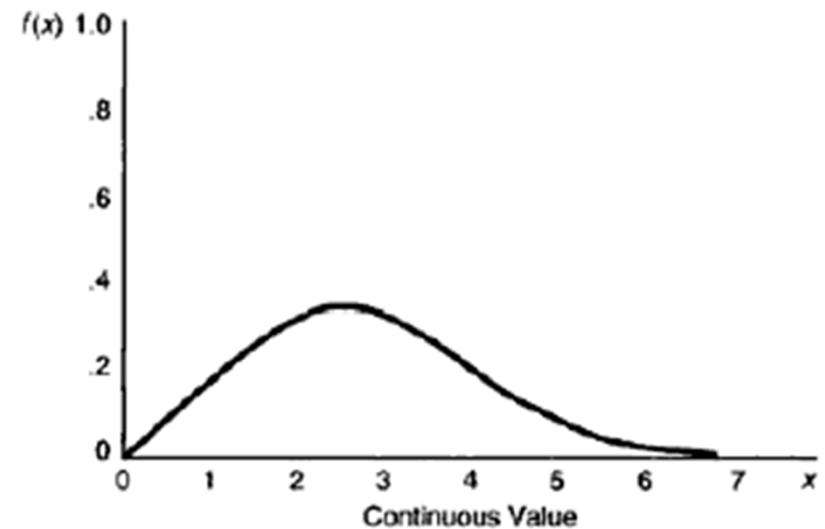
# DISTRIBUSI VARIABEL ACAK

## Variabel Acak (Deskripsi Numerik dari hasil eksperimen)

### Variabel Acak Diskrit



### Variabel Acak Kontinu



# DISTRIBUSI FREKUENSI

Tabel distribusi frekuensi untuk data nilai ujian matakuliah Pemodelan & Simulasi dari 80 orang mahasiswa.

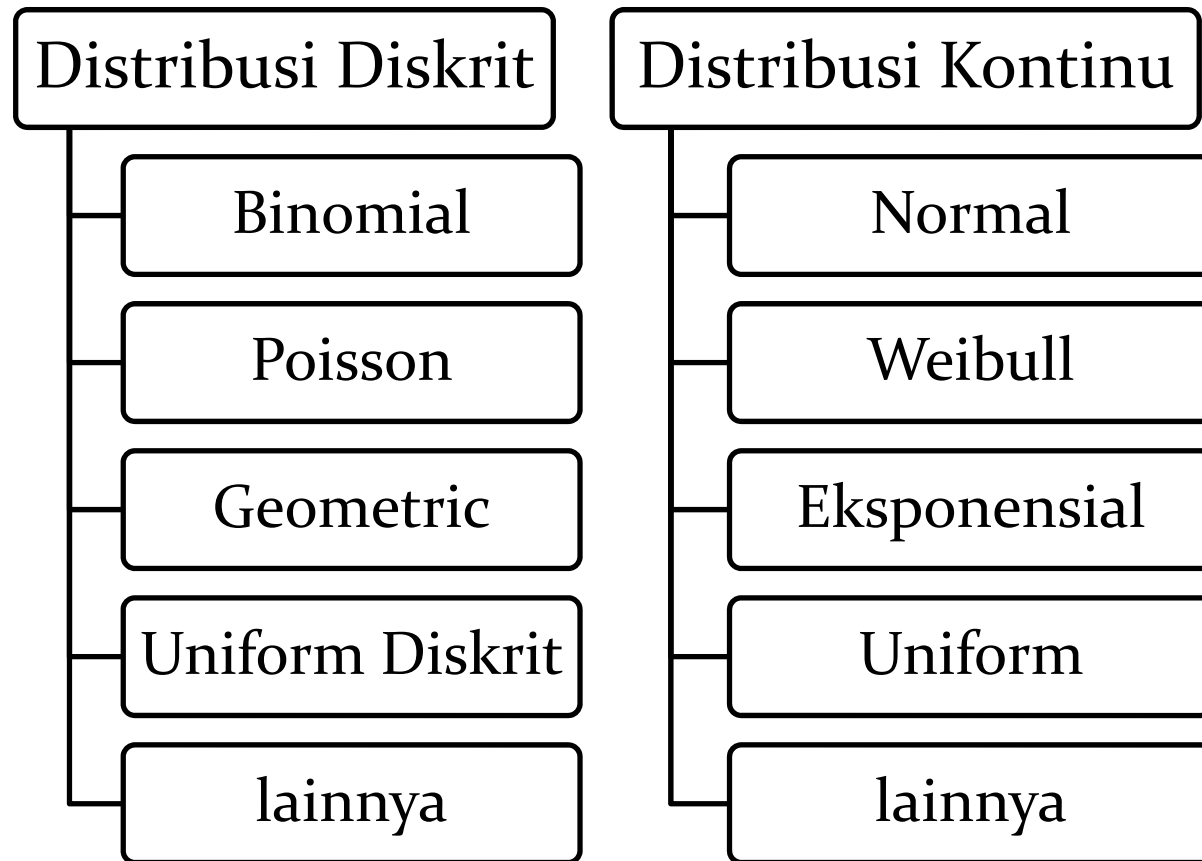
## Kelas Tunggal

NILAI UJIAN	FREKUENSI
40	15
56	10
69	17
70	28
80	10

## Kelas Interval

NILAI UJIAN	FREKUENSI
31 – 40	1
41 – 50	2
51 – 60	5
61 – 70	15
71 – 80	25
81 – 90	20
91 – 100	12

# FUNGSI-FUNGSI DISTRIBUSI



# Distribusi Uniform Kontinyu – $U(\alpha, \beta)$

- Distribusi :

$$f(x) = \begin{cases} 0, & x < \alpha \\ \frac{x - \alpha}{\beta - \alpha}, & \alpha \leq x \leq \beta \\ 1, & b < x \end{cases}$$

- Densitas :

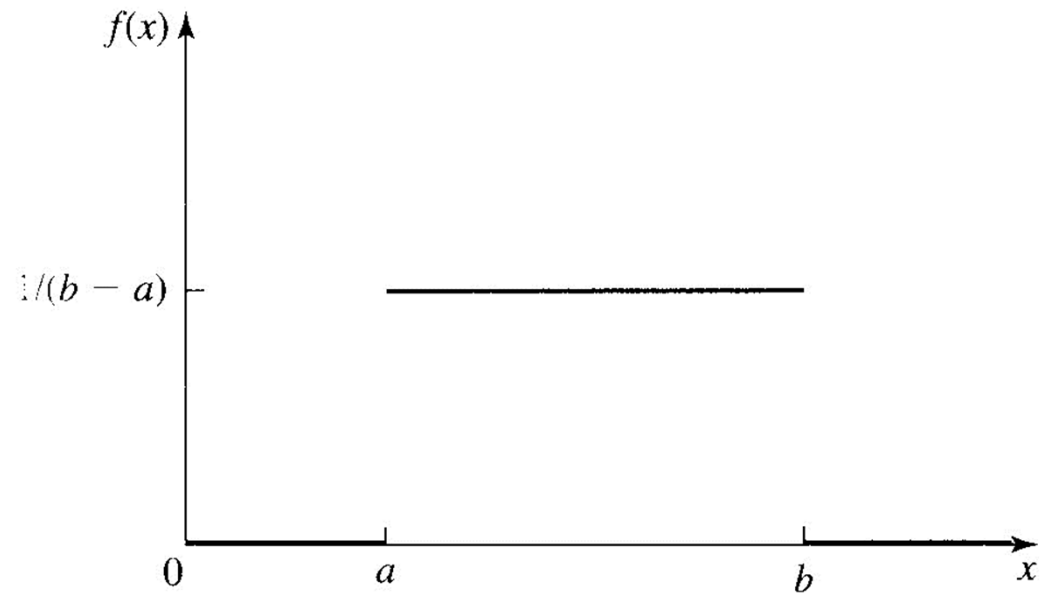
$$f(x) = \begin{cases} \frac{1}{\beta - \alpha}, & \alpha \leq x \leq \beta \\ 0, & \text{untuk } x \text{ lainnya} \end{cases}$$

- Parameter :

$\alpha, \beta$  real ;  $\alpha < \beta$

- Mean:

$$\mu_x = \frac{\alpha + \beta}{2}$$



- Variansi:

$$\sigma_x^2 = \frac{(\beta - \alpha)^2}{12}$$

# Distribusi Normal– $N(\mu, \sigma^2)$

- Densitas :

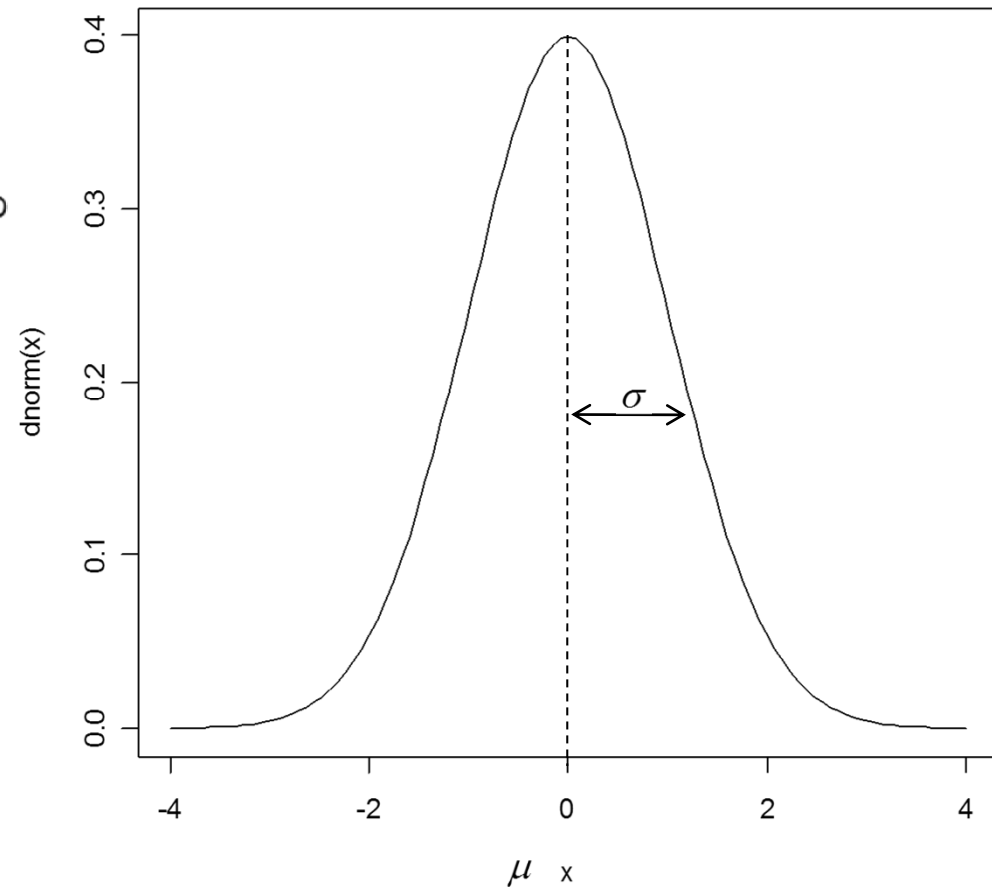
$$f(x) = \frac{1}{\sigma\sqrt{2\pi}} e^{\left(-\frac{(x-\mu)^2}{2\sigma^2}\right)}, \quad -\infty < x < \infty$$

- Parameter :

$$\mu, \sigma ; \sigma > 0$$

- Distribusi normal standar  $N(0,1)$ :

$$Z = \frac{x - \mu}{\sigma}$$



# Distribusi Exponential– expo( $\beta$ )

- Distribusi :

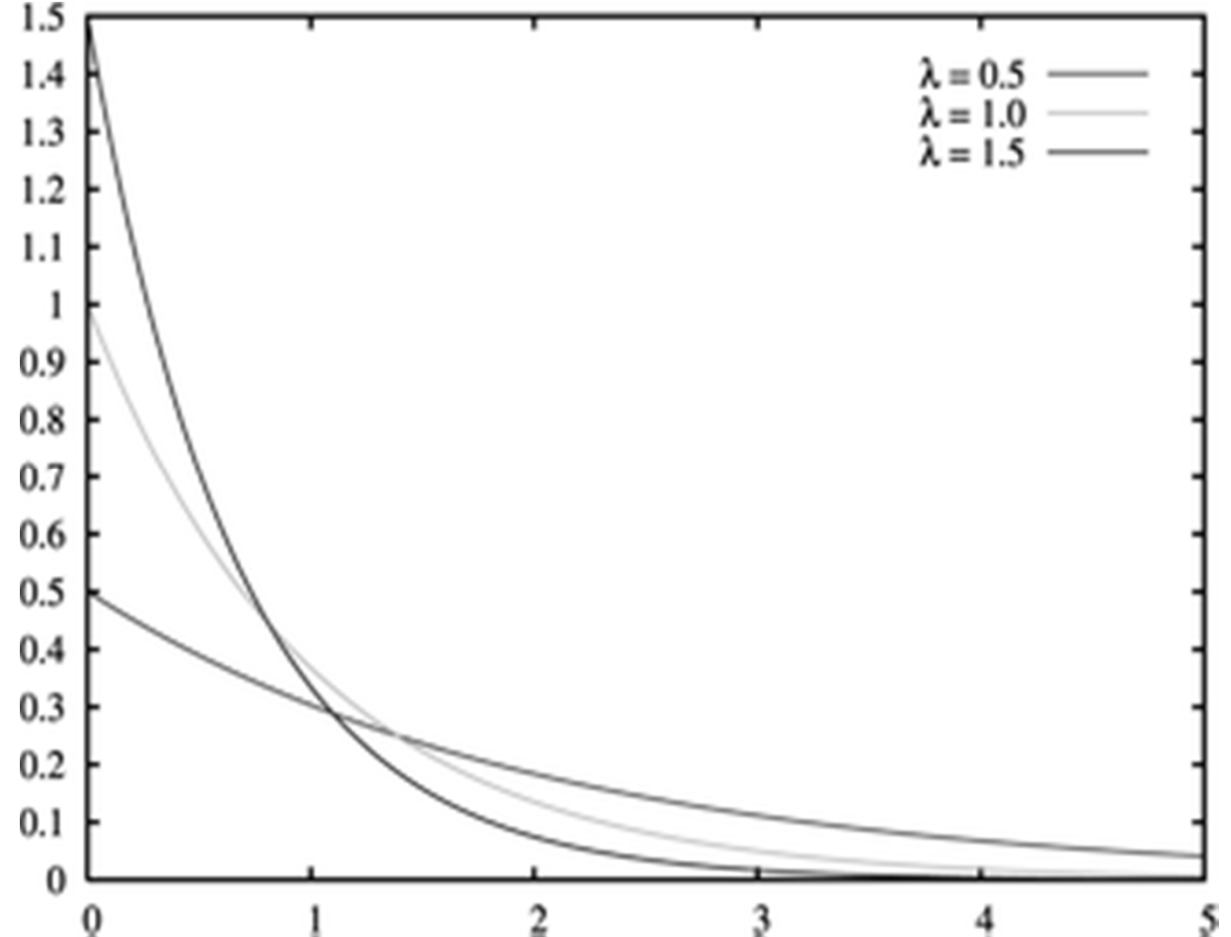
$$f(x) = \begin{cases} 1 - e^{-x/\beta}, & x \geq 0 \\ 0 & , x < 0 \end{cases}$$

- Densitas :

$$f(x) = \begin{cases} \frac{1}{\beta} e^{-x/\beta}, & x \geq 0 \\ 0 & , x < 0 \end{cases}$$

- Parameter :

$$\beta > 0$$





# Distribusi Diskrit Uniform– DU(i,j)

- Distribusi :

$$F(x) = \begin{cases} 0 & , x < i \\ \frac{[x] - i + 1}{j - i + 1} & , i \leq x \leq j \\ 1 & , j < x \end{cases}$$

- Massa :

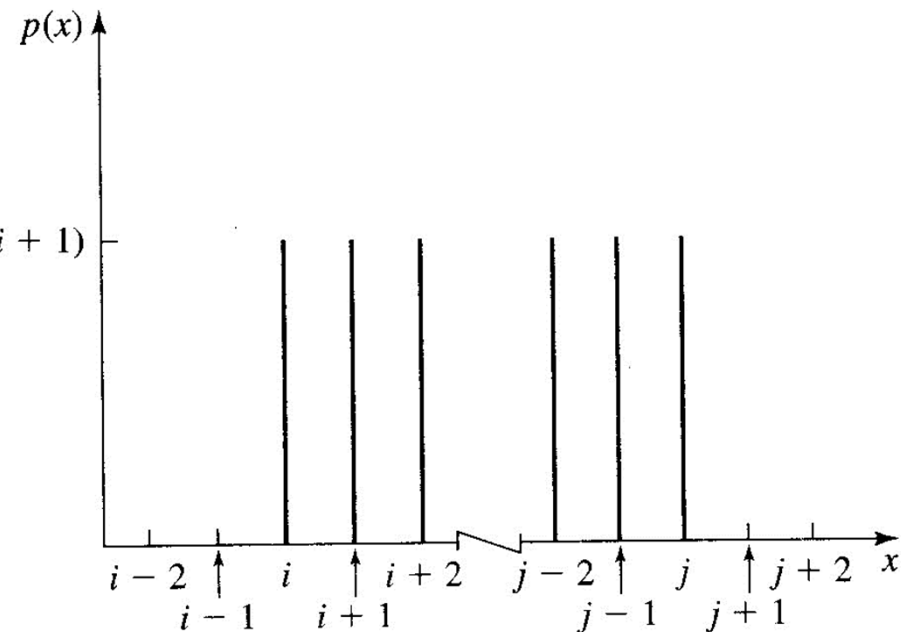
$$p(x) = \begin{cases} \frac{1}{j - i + 1} & , x = i, i + 1, \dots, j \\ 0 & , x \text{ lainnya} \end{cases}$$

- Parameter :

$i, j$  integer ;  $i \leq j$

- Mean:

$$\mu_x = \frac{i + j}{2}$$



- Variansi:

$$\sigma_x^2 = \frac{(j - i + 1)^2 - 1}{12}$$

# Distribusi Poisson– Poisson( $\lambda$ )

- Distribusi :

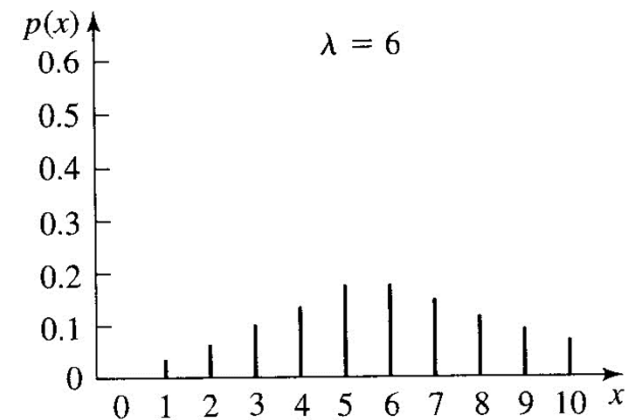
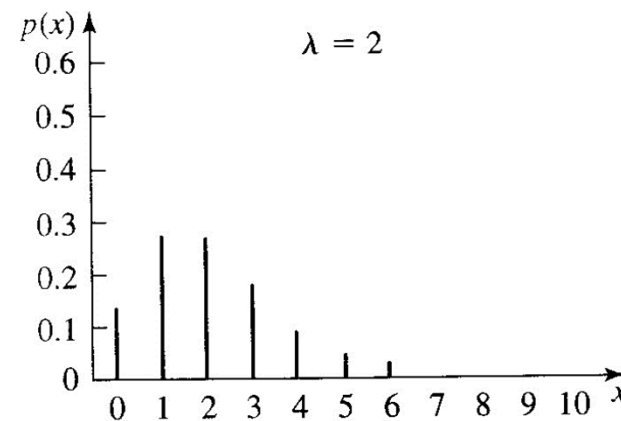
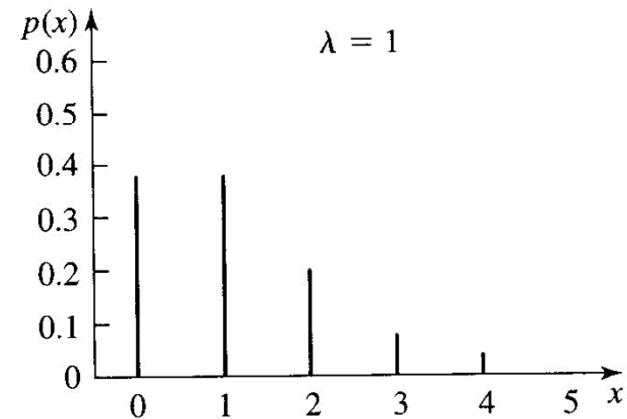
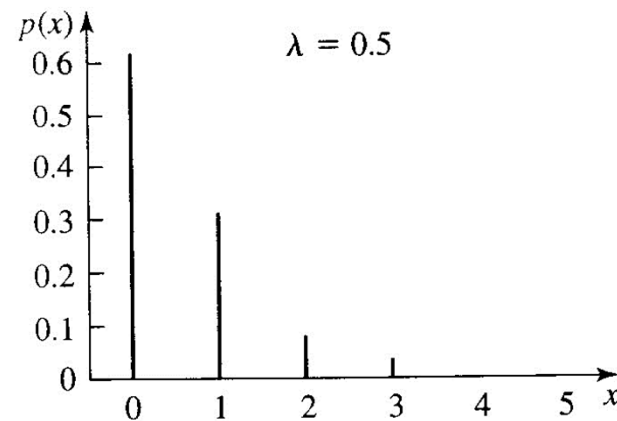
$$F(x) = \begin{cases} 0, & x < 0 \\ e^{-\lambda} \sum_{i=0}^{\lfloor x \rfloor} \frac{\lambda^i}{i!}, & x \geq 0 \end{cases}$$

- Massa :

$$p(x) = \begin{cases} \frac{e^{-\lambda} \lambda^x}{x!}, & x = 0, 1, 2, \dots \\ 0, & x \text{ lainnya} \end{cases}$$

- Parameter :

$$\lambda > 0$$



# Distribusi Binomial– bin(t,p)

- Distribusi :

$$F(x) = \begin{cases} 0 & , x < 0 \\ \sum_{i=0}^{\lfloor x \rfloor} \binom{t}{i} p^i (1-p)^{t-i} & , 0 \leq x \leq t \\ 1 & , t < x \end{cases}$$

- Densitas :

$$p(x) = \begin{cases} \binom{t}{x} p^x (1-p)^{t-x} & , x = 0, 1, 2, \dots, t \\ 0 & , x \text{ lainnya} \end{cases}$$

dimana  $\binom{t}{x} = \frac{t!}{x! (t-x)!}$

- Parameter :

t integer ; t > 0, p ∈ (0,1)

- Mean:

tp

- Variansi:

tp (1-p)

