

Taburan Poisson

Taburan Poisson

Standard Pembelajaran

- Menentukan kebarangkalian suatu peristiwa bagi taburan Poisson.



Boost Your Curiosity

Taburan Poisson

1. Bilangan emel diterima dalam sehari oleh sebuah pejabat dikenapasti bertaburan secara taburan Poisson dengan min 2.5. Cari kebarangkalian bahawa suatu hari didapati

- tepat 5 emel diterima,
- kurang daripada 6 emel diterima.

Penyelesaian:

a) $P(X = 5); \lambda = 2.5$

Nota:

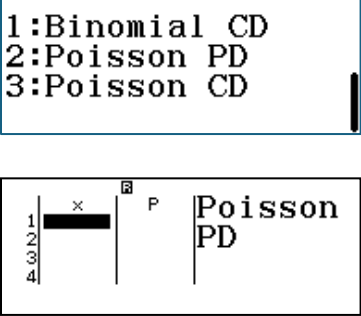
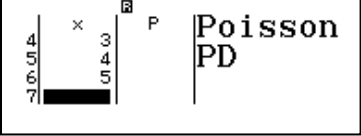
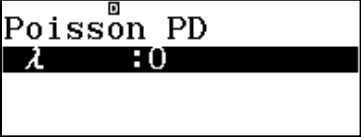
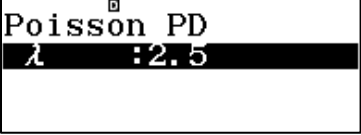
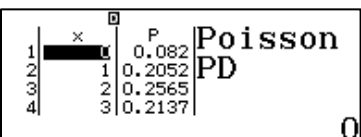
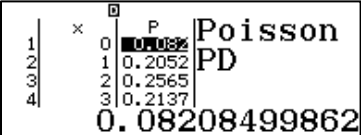
$$P(X = x) = \frac{e^{-\lambda} \cdot \lambda^x}{x!}$$

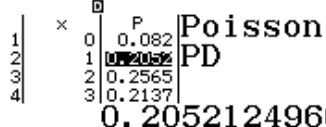
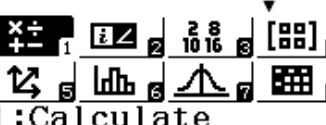
Arahan	Paparan Skrin Kalkulator
MENU 7 ▼ 2 2	1:Binomial CD 2:Poisson PD 3:Poisson CD Poisson PD x : 0 λ : 0
Masukkan nilai x dan λ. 5 = 2 . 5 =	Poisson PD x : 5 λ : 2.5
Dapatkan kebarangkalian. =	P= 0.06680094289 Maka, $P(X = 5) = 0.0668$

b) Cara 1: Guna **Poisson Probability Density (PD)**, 'List'

$$P(X \leq 5) = P(X = 0) + P(X = 1) + \dots + P(X = 5)$$

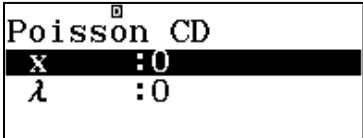
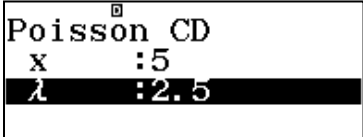
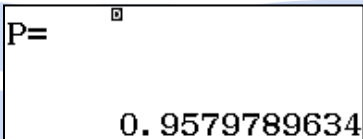
$$x = 5, \lambda = 2.5$$

Arahan	Paparan Skrin Kalkulator
MENU 7 ▼ 2 1	
Masukkan nilai $x = 0, 1, 2, 3, 4, 5$. 0 = 1 = 2 = 3 = 4 = 5 = =	 
Masukkan nilai $\lambda = 2.5$. 2 . 5 =	
Dapatkan kebarangkalian. =	
Alihkan ke sel ditanda ke nilai kebarangkalian 0.082. ▶	

Seterusnya, simpan $P(X = 0) = 0.082$ sebagai A. STO (→)	Stored to A
Simpan kebarangkalian seterusnya sebagai B. ▼ STO □□□ Ulang langkah yang sama bagi kebarangkalian berikutnya sebagai C, D, E dan F. ▼ STO x^y ▼ STO sin ▼ STO cos ▼ STO tan	 Stored to B
Seterusnya, tambahkan kesemua kebarangkalian $P(X \leq 5)$. Tukar Menu kepada Calculate. MENU 1 Tambahkan semua kebarangkalian dengan memasukkan operasi $A + B + C + D + E + F$ ALPHA (→) + ALPHA □□□ + ALPHA x^y + ALPHA sin + ALPHA cos + ALPHA tan =	 $A+B+C+D+E+F$ 0.9579789618 Maka, $P(X \leq 5) = 0.9579$

b) Cara 2: Guna **Poisson Cumulative Distribution (CD)**, 'Variable'

$$P(X < 6); x = 5, \lambda = 2.5$$

Arahan	Paparan Skrin Kalkulator
MENU 7 ▼ 3 2	 
Masukkan nilai $x = 5, \lambda = 2.5$. 5 = 2 . 5 =	
Dapatkan kebarangkalian. =	 Maka, $P(X \leq 5) = 0.9579$

2. Sebuah hospital menerima purata 6 panggilan kecemasan dalam tempoh sejam. Kira kebarangkalian hospital itu akan menerima
- tepat 3 panggilan kecemasan dalam tempoh sejam,
 - sekurang-kurangnya 3 panggilan kecemasan dalam tempoh sejam.

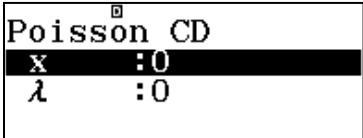
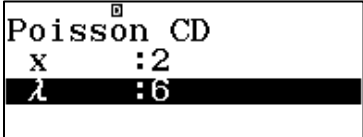
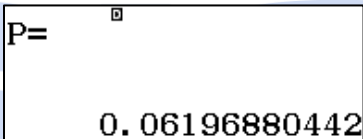
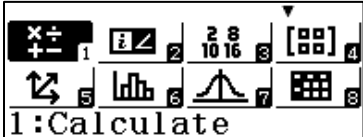
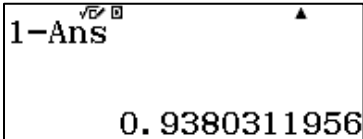
Penyelesaian:

a) $P(X = 3); \lambda = 6$

Arahan	Paparan Skrin Kalkulator
MENU 7 ▼ 2 2	1:Binomial CD 2:Poisson PD 3:Poisson CD Poisson ^DPD x :0 λ :0
Masukkan nilai x dan λ. 3 = 6 =	Poisson ^DPD x :3 λ :6
Dapatkan kebarangkalian. =	P= 0.06680094289 Maka, $P(X = 3) = 0.0668$

b) Guna **Poisson Cumulative Distribution (CD)**, 'Variable'

$$P(X \geq 3) = 1 - P(X \leq 2); x = 3, \lambda = 6$$

Arahan	Paparan Skrin Kalkulator
MENU 7 ▼ 3 2	 
Cari $P(X \leq 2)$. Masukkan nilai $x = 2, \lambda = 6$. 2 = 6 =	
Dapatkan kebarangkalian $P(X \leq 2)$. =	 Maka, $P(X \leq 2) = 0.0620$
Seterusnya, cari $P(X \geq 3) = 1 - P(X \leq 2)$ MENU 1 1 - Ans =	  Maka, $P(X \geq 3) = 0.9380$